Industrial R&D Gets Boost Despite Lack of Patent Reform

NEW DELHI—R&D has never been a major concern for Indian industry. Aided by government policies that protected them from outside competition, most companies saw little need to spend money on research—a meager 0.6% of annual sales, according to one recent estimate—to keep their customers happy. But the political reforms that in the past 4 years have opened up India's economy to a flood of outside investment are beginning to produce a shift in attitudes toward R&D as well. And that could mean greater opportunities for researchers.

ECONOMIC REFORMS SPUR FOREIGN INVESTMENT ...

Year	Investment (in millions US$)
1991	160
1992	1170
1993	2660
1994	4260
1995	3150 *

* For first 9 months

SOURCE: INDIAN DEPARTMENT OF INDUSTRIAL POLICY AND PROMOTION

Industrial input. R&D is part of the investment that foreign companies are making under India's more liberal policies.

The change is partly a response to the growing presence in India of multinational companies with large R&D operations. Tucked into a 30-fold rise in foreign investment (see table) are a growing number of corporate research centers on Indian soil and joint efforts with Indian partners. The new faith in R&D is also a product of what is seen as an inevitable updating of the country's antiquated laws governing intellectual property rights (*Science*, 10 March 1995, p. 1419). Although Parliament adjourned last month without codifying a government ordinance introduced 1 year ago that would have permitted product patents and exclusive marketing rights, most business leaders are already anticipating the day when the new law is adopted. "The new act will come through sooner or later," predicts Amit Mittra, secretary general of the Federation of Indian Chambers of Commerce and Industry (FICCI), an association of Indian industries. "It is more important that we prepare ourselves for what we need to do."

Perhaps the most direct impact of the liberalization of India's economy has been the lowering of customs duties. Starting in 1994, for example, the tax on equipment associated with R&D activities was reduced from 50% to 25%. A duty reduction on imported chemicals and raw materials has been a real incentive to improve R&D, says Srikumar Suryanarayan, general manager for R&D at Biocon India Ltd. In fact, next month Biocon will commission a new $8 million plant that will triple the company's production of enzymes for use by the country's textiles, fruit products, and pharmaceuticals industries.

... WHILE LOCAL FIRMS STILL TEST THE WATER

Year	R&D Spending (in millions US$)
1988–89	126
1989–90	150
1990–91	172
1991–92	195
1992–93	234
1993–94	Not available
1994–95	231

SOURCE: INDIAN MINISTRY OF SCIENCE AND TECHNOLOGY

The arrival of multinational companies as domestic competitors is a big change for most Indian industries. Indian industry "grew up on restrictions of various kinds and a strict, protectionist regime," says Ajay Kumar Rungta, past president of FICCI. "That is why it has been slow to rise to the challenges of funding in-house R&D." But that lackadaisical attitude is rapidly disappearing. "Indian companies had better learn to swim if they want to avoid sinking [in the world economy]," says Ashok Parthasarathi of the Department of Scientific and Industrial Research (DSIR).

One firm making a big splash is Unilever, the Dutch-based consumer products giant which opened an R&D center in Bangalore to carry out work on various food products. The center complements a facility established in 1958 in Bombay to work on oils, agribiotechnology, and cosmetics. The two labs, which employ more than 200 scientists, represent the only Unilever research facilities outside Europe and North America.

However, Unilever isn't the only one in the swim. Last October, General Electric signed a contract research alliance with the National Chemical Laboratory, Pune, one of the country's premier national laboratories, to do research on polymers. And DuPont is awaiting final clearance for a large agricultural R&D facility at a site not yet chosen; in the meantime, it has already spent $1 million in seed money. DuPont India has also begun working on a major alliance with the Indian Institute of Chemical Technology, Hyderabad, a national laboratory, on agricultural chemicals research.

DuPont has targeted India for special emphasis in its global R&D program, says DuPont India's senior programs manager, Irvin Lipp, and has created an India Technology office to strengthen its links to the scientific and technical community. "It makes no sense to bring in people from outside India," says Lipp, when there is a large and talented indigenous labor pool.

Indian companies are also taking advantage of the increased foreign interest in their activities. Ranbaxy, one of India's top pharmaceutical companies, sees its new global alliance with Eli Lilly and Co. as a landmark event. The alliance will spawn two joint ventures, one based in India and the other in the United States, and will supplement a new clinical pharmacology unit formed to help the company pursue rational drug design. Ranbaxy spends about 5% of gross sales on R&D, one of the highest percentages in the country.

The new international linkages have also had a positive impact on working conditions and opportunities for researchers. "DuPont adopts the top half of the salary bracket for what comparable Indian companies pay as a frame of reference," says Lipp. Another aspect of working for a multinational, says Prabuddha Ganguli, who heads the patents and information unit at Unilever in India, is "high job satisfaction," which stems from modern facilities, access to the proper equipment and supplies, and strong institutional support.

Such tangible signs of change are a big improvement over some recent government efforts to stimulate R&D investment that have failed to have the desired effect. For example, only 12 companies have taken advantage of the federal government's 2-year-old R&D tax credit scheme that provides a 125% tax exemption for R&D investments in national laboratories. The problem, according to R&D managers, is that the credit is worthless to most Indian companies. "It makes little sense, because we do not pay taxes now," says Mohan Damodaranasan Nair, vice president of the pharmaceuticals division of Southern Petrochemicals (SPIC), a leading petrochemical company and one with an active R&D program. "SPIC ploughs all profits back into production." Biocon India's Suryanarayan echoes that view: "A tax credit would never be our driving force to do R&D."

The pending changes in patent law are viewed as another important ingredient in promoting R&D spending. Industrial leaders see it as a signal of India's commitment to a level playing field internationally, although Suryanarayan notes that "a person keen on patenting a product can always do so abroad." There is even a chance the patent bill will be taken up again in a prebudget session of Parliament that begins shortly, although the political agenda is limited because of general elections this spring.

However, legal reforms are only part of the problem. "Changing the patents act will harmonize policy in India with the rest of the world," says Unilever's Ganguli. "But we need an entire overhauling of our national infrastructure." The key features of such an overhaul, according to patent law experts, include a comprehensive information system to support patenting activities, a heightened professionalism among patent examiners, modernization of India's main patent office, and increased awareness of the value of obtaining a patent.

A recent conference in New Delhi gave government and business leaders a chance to promote that agenda. Effective enforcement of existing and new laws is essential for progress, says DSIR's Parthasarathi, but more is needed: Indian boffins "also must realize the urgency to patent first and publish later."

Raghunath Mashelkar, secretary of DSIR, predicts that the increased ties with global R&D giants will lead to a permanent change in corporate attitudes toward R&D. "Indian researchers have tasted blood," he says, and will not easily forget the experience. He and others hope the next step is for Indian companies to move in for the kill.

–Pallava Bagla

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RUSSIA

Tax Law Casts Pall Over Research Aid

MOSCOW—Just before last month's general election, the upper house of Russia's Parliament, the Federation Council, scrapped a set of minor amendments to a new tax law. This action, which went largely unnoticed, may have a devastating effect on Russian science, because it overturns the ad hoc tax exemptions enjoyed by the foreign aid foundations that have played a key role in keeping research going since the collapse of the Soviet Union. The demise of the amendments means that foundations must pay taxes like any other organization operating in Russia—a requirement that may jeopardize the future of many of them, including the International Science Foundation (ISF), funded by the American financier George Soros.

The law was one of the last passed by the Duma (Parliament's lower house) before the election. The original draft presented to deputies required all recipients of grant money to pay taxes on it, regardless of which foundation it came from, revoking the tax exemptions enjoyed by the ISF and other aid organizations. But in mid-December, Nikolay Vorontsov, then-chair of the Duma subcommittee on science, proposed amendments guaranteeing the foundations certain tax exemptions, and these were duly adopted by the Duma.

Just a few days before Parliament was dissolved, however, the Federation Council vetoed the amendments. At the final meeting of the old Duma, Vorontsov made a last desperate attempt to persuade deputies to overturn the Council's veto, but the deputies were too busy making farewells to each other, and his pleas were ignored. Vorontsov, from the "Russia's Democratic Choice" party, subsequently lost his Duma seat in the election.

The Federation Council's action came as a surprise to most parliamentary officials, although many believe that the Ministry of Finance put pressure on representatives to scrap the amendments to maximize tax revenue. Pavel Arsenyev, executive director of the Moscow office of the ISF, the most generous foreign supporter of Russian research over the past few years, told *Science* that the veto was completely unexpected, because just a few days earlier some of the Council representatives had reassured him that the amendments would definitely be approved by the upper house.

Many researchers now face the prospect of losing a substantial proportion of the meager funds they receive from the West—the new tax could swallow 50%, depending on the size of the grant—and the added complication of dealing with the Byzantine regulations of Russia's tax authorities. The tax bite will be particularly painful for groups receiving the smaller grants of just a few thousand dollars. And under this new regime, Western foundations may not consider it worthwhile to fund Russian scientists—fulfilling a prediction Soros had made in 1992, when he requested tax-exempt status for the ISF from President Boris Yeltsin.

Imposing tax on foreign aid will "force people to resort to smuggling money in suitcases."

—Isaac Skelton

Lev Okun, executive committee member of INTAS, the European Union's (EU's) funding program for East European scientists, expects "many legal difficulties to arise from this matter." Although INTAS's first round of grants was announced in 1994, complications over the program's tax status meant that no money was actually distributed until 1995. Last autumn, the EU decided to extend INTAS's work for another 3 years and provided more than $60 million for more grants to East European researchers. Okun says that INTAS will not necessarily stop current projects because of the new tax laws, but it may reconsider whether to distribute any new grants.

As for the ISF, its main program of funding Russian researchers, which has already distributed $125 million, is now winding down, although Soros is maintaining some others, such as his library program. One hundred twenty other organizations, however, have been exploiting the ISF's ready-made tax-exempt status and established networks for distributing funds by employing the ISF as an agent to handle their aid. Those activities are now in doubt. Isaac Skelton of ISF's Washington office says that Yeltsin's decree still gives the foundation a "special umbrella," and it was still "working on the assumption that we are exempt from taxes." But he adds, "Our office in Moscow is working hard to overturn the [veto]." Imposing tax on foreign aid, Skelton says, will "force people to resort to smuggling money in suitcases."

There may, however, be a bright spot on the horizon. Mikhail Glubokovsky, deputy chair of the committee on culture, education, and science in the old Duma (who held onto his Duma seat), told *Science* that the new Duma may come to the rescue of the foundations. Although the communists and nationalists who dominate the new Duma have in the past attacked foreign aid as an attempt by the West to hijack Russian science and military secrets, Glubokovsky thinks they may now be willing to restore the foundations' privileged status—as a show of concern for Russian scientists.

–Vladimir Pokrovsky

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