

Equalizing US–Japan technology flow

Concern is growing in the United States over the adverse effects on trade balances caused by inequitable technology flow between the US and Japan. A partial list of reasons for the imbalance includes the following:

- ▶ The Japanese send their best graduate students to the US to obtain PhDs. The US provides financial as well as intellectual support for many of them.
- ▶ Japan obtains a lot of its technology through small US companies by any one of three methods: licensing, equity investment or acquisition of the total company. The US does not have similar opportunities in Japan.
- ▶ Larger US corporations have not sought foreign technology as diligently as they should have.
- ▶ US firms have not acquired the rights to technologies developed in Japan but based on US science, in large part because policies of the Japan Fair Trade Commission inhibit grant-back agreements. (Such agreements give the originator of the technology rights to exploit improvements in the technology made by the party to whom it was transferred.)
- ▶ Japan is not performing its fair share of the basic research that adds to the world's store of knowledge, yet Japan has virtually unlimited access to US research.
- ▶ Government laboratories and cooperative projects involving the government and private companies carry out a significant part of Japan's meager basic research. Their activities are effectively closed to US companies, and, for the most part, US companies do not have access to patents held by the Japanese government.

Moves are under way in both countries to address the imbalance in technology flow. In Japan, the Science and Technology Agency has submitted a recommendation for legislation to make technology developed in government laboratories more accessible to foreigners.

In the US last year, the Stevenson–Wylder Technology Innovation Act of 1980 (to facilitate technology transfer from US government labs) was amended to give Federal laboratory directors discretionary authority to deny access to US research by organizations of any foreign country that do not grant similar privileges to American organizations. Also, Congress is considering legislation that would establish equitable technology flow as a priority in trade negotiations.

While the foregoing actions are progress in the right direction, much remains to be done before equitable flow is achieved. One of the most important

and critical needs is a vast expansion in technological cooperation embracing a wide range of science and engineering. Although in recent years the number of cooperative projects has increased, the potential is far beyond the present level of activity.

Increasing the number of US scientists and engineers living in Japan is another obvious way to increase the flow of technology to the US. Cultural, linguistic and other barriers make it difficult for the US to counterbalance the 7000 Japanese graduate students and postdoctoral fellows in science and engineering in the US.

Because there is no practical way to achieve an appropriate relationship between the numbers of foreign graduate students and postdoctoral fellows in our two countries, I believe the Japanese government should pay any US university where Japanese nationals are studying \$10 000 annually, in addition to tuition, for each such student.

The net additional income to US universities would be approximately \$70 million per year. This amount, although relatively small in comparison with total annual expenditures for basic research, would be very helpful in keeping US university research facilities up to date and filling junior university faculty positions—which is currently a problem owing to the gap between industry salaries and starting faculty salaries.

In the long run, Japan must develop the institutions and resources that will permit it to share with other nations in the costs as well as the benefits of technology. During the transition, Japan should assume its fair share of responsibility for the generation of new knowledge. One way would be for it to provide an appropriate level of funding for basic research to be administered by the US National Science Foundation.

Another possible action is for Japan to grant rights to US firms for technologies developed in Japan using the results of US technology. Accomplishing this will require modification of the policies of the Japan Fair Trade Commission.

Other actions could be taken to help eliminate the imbalance in technology flow, but the major point is that formidable efforts will be required to achieve equitable technology flow between the US and Japan. It is time to act. Clearly, the rewards for achieving that goal justify the effort.

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