Japan's Technology Imports Changing

A review of Japan's technology induction policy, and a look at expected trends in future

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Japan appeared relatively late on the industrial scene in the world. The country was not allowed the leisure to develop its own technology to the full extent and it has adopted massive programs to import it. Japan is actively seeking technology imports, partly because she is behind in her own research and development. According to surveys by the Japanese Government Agency of Science and Technology and by our own group in Tokyo at the end of 1974, total dollar outlay for R&D in Japan was \$5.3 billion. Approximately 73%, \$3.7 billion, was expended by private sectors in Japan. About one sixth, \$600 million, was technology purchases from abroad.

It is often said that R&D is diminishing due to the inflationary rise in prices and wages. The content and substance of technology imports in Japan are also changing rapidly. If one considers the changes in direction of R&D efforts in Japan since the crisis of shortages of energy and industrial materials, it becomes evident that Japan is giving new and vigorous attention to socioeconomic changes and to environmental questions. The time has come for Japan as a technology-importing country to re-examine the whole range of problems of technology development.

High-Technology Type of Licenses Decrease

Japan adopted 13,717 foreign technology licenses between 1950 and 1973. These belong to the so-called Class A technology assistance contracts. They are subject to Foreign Investment Law of Japan and the duration of contract or period of payment exceeds one year.

Over two-thirds of these contracts were entered into after June, 1968, when the first phase of the Foreign Trade and Investment Liberalization Program began, and 1973, when the full liberalization in foreign trade and investment became effective. Since 1973, a limit of royalty payment was increased from \$50,000 to \$300,000.

"Ever-increasing" or "one-sided" technology induction, as often quoted by the press in Japan, is meant to indicate the lagging of Japan's own R&D efforts. Japan cannot hope to have ever-increasing foreign technology imports, just as she no longer can expect rapid economic growth.

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Let's look at the recent tendencies in technology imports in Japan. First, there was an increase in the area oriented to consumer products, namely trademark and know-how in fashion and design. Meanwhile, technology imports decreased in the area of machinery, electrotechnology, metallurgy, and chemistry. The number of foreign technology licenses in 1973 was 1,931, which is an increase by only 15 cases compared with 1972. This means a decrement of high and pure industrial technology.

Second, the above tendency appears in many other areas. The United States remains the largest provider of technology licenses to Japan. Following West Germany, which has second place, France, as a fashion kingdom, holds third place, surpassing the United Kingdom. In apparel and textile, centered around fashion and design, France is first, surpassing the United States. In total number of licenses, it surpasses the United Kingdom. From Italy, license imports in fashion and leather products are increasing.

13 Japanese Companies Wanted the Same U.S. Trademark License

Technology imports in Japan take the form of technical assistance contracts involving patents or know-how or both. In the electrotechnology, there are many license contracts involving patent(s). In the machinery and chemistry, many contracts involve both patent(s) and know-how.

In 1973, there were more technology imports in consumer products and related areas than in industrial manufacturing technologies. There was an increase in imports of licenses in the leisure industry and fashion and design fields. Trademark and know-how license in fashion and apparel totaled more than 200 cases.

There were many designs and marks in the 1,900 cases of foreign technologies Japan imported. Thirteen companies entered into contracts with Little League Baseball Ltd. to use the same trademarks on baseball equipment. This clearly indicates the technologies Japan imports are not all highly-sophisticated industrial in nature. Some dealing with electric appliances were purchased only as means of gaining market.

In some cases, there are no alternatives. License contracts must be taken from outside Japan because the patent rights are firmly held by foreign companies. Twenty-four Japanese companies have license contracts with Motorola, Inc., U.S.A. to use the same technology of radio receiver and of magnetic tape-player. Twenty Japanese manufacturers took licenses on the same TV camera monitoring equipment from RCA Corp. Thirteen electronics firms introduced semiconductor material manufacturing technology from Fairchild Camera and Instrument Corp.

Trend Continues

The trend continues in which multiple companies take license contracts introducing the same technology from one licensor. In 1973, 78 kinds of technologies were introduced and licensed to 298 companies (in numbers of contracts). This shows an increase by 37 kinds and 27 contracts compared with 1972. We can surmize that the pure, high technologies induced by Japan are declining.

Electronic computers and related technologies have long been protected by the Japanese Government. They are specified as nonforeign trade and investment liberalization items. However, introduction of computer hardware technology declined partly because Japanese industries fully utilized already-imported technologies and partly because they succeeded in their own R&D in computer hardware.

Disparity of Revenue and Expenditure in International Technology Licenses is Widening

One may conclude that Japan does not need many technologies. In comparison with other industrial nations, Japan has placed great emphasis on introducing foreign technologies. In technology import/export trade Japan shows excessive deficit, if compared with France and West Germany, which also suffer deficit in international technology trade. The number of foreign technology licenses, which require a payment of $50,000 or less and automatic approval is given by the Bank of Japan, has decreased. After December 1973, the authorized payment limit with automatic approval increased to $300,000. However, technology induction in which royalty payments are in excess of $50,000 is increasing. The number of license contracts with payment requirement is also sharply increasing. Therefore, the disparity between technology imports and exports is becoming wider.

On the other hand, licensing revenue to Japan has increased year after year. In 1973, the amount was $88.5 million, an increase of 18.9 percent over 1972. However, the licensing revenue Japan receives is only one-fourth that of the United States. This figure equals one-fourth of British and French revenue and half of what West Germany receives. On the other side of the balance sheet of Japan's technology trade, the payment in 1973 reached $715 million. This is an increase of 25 percent over 1972.

Among the 1,900 Class A type of technology imports, only 93 cases involve no payment (of which 16 cases are cross-license contracts). The ratio of revenue against expenditure in technology trade of Japan is 1:12.3. In West Germany, the ratio is 2:3.

Planned Imports

It is no exaggeration to say that since World War II, Japan has tried to achieve great economic growth and high levels of technological capability by introducing high technologies from other industrial countries, particularly the United States. This was done to avoid the risk and financial burden of using her own R&D, and to decrease the lead time from initial R&D to actual utilization of developed technologies. When environmental issues emerged, Japan increased the imports of pollution-control technologies. When the energy and industrial material resources posed a serious situation, Japan looked to the world for the energy-saving and resource-saving technical know-how.

International Cooperation Is An Absolute Necessity

High economic growth in Japan has resulted in sharply increasing per-capita disposable income and the Japanese people are more interested in consumer and leisure-oriented goods and services. Imports of designs and marketing know-how are increasing in industries, such as golf, baseball, yacht, and in fashion designs from women's dress to children's underwear. In recent years, imports of pollution-control technology are declining while resources- and energy-saving technology imports are rising rapidly and constantly.

Needless to say, it is not easy to develop technologies to meet the needs and demands of rapidly changing societies. Therefore, Japan will continue to receive basic patents from outside and utilize results of basic R&D in industrial materials. Considerable lead time is needed for Japan to utilize the fruits of her own R&D to export technologies as her products. It is necessary to conduct technology forecasting and to determine proper objectives of her R&D. Therefore, Japan must set up a technological information-gathering network. In light of accelerating internationalization in technology transfers and exchanges, Japan also should introduce technologies from outside which are not otherwise available. International cooperation is also necessary in R&D.

Japanese R&D Expenditures in Industries Is 1.4 percent of Total Sales

Expenditures for R&D in Japan are decreasing in real terms due to the sharp increase in prices and wages. It is estimated that if things remain as they are, Japanese R&D itself will decline constantly. In the United States and Europe, government spends more on R&D than private sectors do. In Japan over 70 percent of R&D expenditures are borne by private sectors. Understandably, it is difficult to make a substantial lead investment. Though the ratio of R&D expenditure by private industries is larger in Japan, the expenditure ratio of R&D against the total sales is only 1.4:100. This figure is much lower than that of the United States (2.2%), France (2.0%), and West Germany (2.8%). More efforts are needed in this area of R&D problems.

In Japan, concerned people tend to argue on the evaluation and approaches only in terms of foreign technology induction vs own R&D. Utilizing the advantages of both approaches is most desirable in Japan.

NOTES:

Types of Foreign Technology License in Japan

Technology assistance agreements are classified by the

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Important Role of Licensing in World

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technological developments that are made only within each individual enterprise are likely to be inadequate. Thus, in many countries, projects are undertaken on a national scale in order to solve these important problems. International agencies, such as the United Nations and the OECD, are also promoting international cooperation in science and technology. On the other hand, the importance of technological exchange or trade among enterprises is on the increase. This is the very reason why we should further promote international licensing activities.

The basic idea of technological licensing is to disseminate new technology rapidly and improve the technological standard of total society, avoiding the overlapping investments in research and development.

Important Role of Licensing

It is important to promote the brisk activities of technical licensing internationally. Promotion of international licensing activities will make it easier to make effective responses to such large problems as mentioned before on a worldwide basis.

Technology related to resource and environmental problems should be mutually utilized with a sense of international solidarity so that it will be possible to use the most advanced and up-to-date technology in the most needed places.

Japan has imported from foreign countries pollution control technology, such as disposal of dust or dirt, desulfurization, and waste water disposal. There were 10 cases of such technology imports in 1965 and 63 in 1970. It has increased every year up to 90 in 1972. This is a good example of the application of the international licensing activities.

Licensing transfers can be also an effective means to reduce a technological gap between the industrially advanced nations and developing countries and to improve the total technical level in the world. Under the traditional pattern of world trade, the advanced nations exported to the whole world the products mass-produced from the imported resources. To continue this pattern may neither bring a solution to the technological gap nor promote industrialization in developing countries. In this sense, it is desirable for advanced nations to shift to the policy of exporting technology to every extent possible.

Sense of Responsibility

As is well known, the spectacular development of Japan in technical and economic fields was due in large measure to the introduction of technology from foreign countries. Accordingly, Japan feels a sense of responsibility to developing countries to extend positive technical assistance in their industrialization. The advanced countries should compete with each other in technical development on a free and equal basis and should actively exchange the results of their competitive efforts in the form of licensing transfer.

In this manner, each country and enterprise can contribute to the development of human society as a member of the international community.

While each licensing activity is carried out by individual enterprises, we cannot help but recognize that the totality of the efforts combined does play a very important role in modern society and also that we must make further efforts to promote this activity.

Conclusion

I have mentioned the urgency of the resources and environments problems and the significance of technological licensing. In order to promote licensing activities there is need first of all for effective exchange of information on technology, a fact that has recently gained wide recognition.

It is gratifying that various kinds of information service agencies have been established and that international conferences and exhibitions are frequently held. I hope that these activities will be further promoted and all enterprises will earnestly come to grips with this problem in order to get fruitful results from technological exchange through licensing transfer.

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Japanese Government into the following two categories.

1. Class-A Type

Class-A agreements are within the application purview of the Foreign Investment Law and are technology assistance agreements in which either the effective period or the period for payments exceed one year.

Therefore, if an agreement requiring no payment is effective for over one year, it is a Class-A agreement. An agreement for payment from Yen currency is also defined as Class A, only if the period of payment or the effective period is over one year. Similarly, an agreement to grant licenses under a trade-secret right alone, if its effective period is in excess of one year, belongs to Class A.

2. Class-B Type

Class-B agreements are the ones with an effective period and period for payment of one year or less and these agreements are considered by the Foreign Exchange Law. An exception is that a technology assistance agreement between a foreign company and its subsidiary or branch in Japan, even though its effective period or period for payment exceeds one year, is a Class-B arrangement. Most typical of Class-B agreement is the one for lumpsum payment in exchange for granting of a license of patent rights or for the supply of technical know-how and drawings to be made within one year.

Overlooked Opportunities

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[31] Transparent-Wrap Mach. Corp. v. Stokes & Smith Co., 329 U.S. 637 (1947).

[32] Chevigny, *The Validity of Grant-Back Agreements Under the Antitrust Laws,* 34 Fordham L. Rev. 569 (1966).

[33] *Compare* United States v. Glaxo Group Limited, 302 F. Supp. 1

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