

Looking Ahead: Prospects in Spain

Examination of current state of affairs, with suggestions on how future can be enhanced

BY EUGENIO TRIANA

Spain is a country which is characterized as a net receiver of external technologies, reaching a very considerable volume with respect to fundamental economic magnitudes. Spanish industry satisfies its needs for technical know-how through recourse to the importation of technology. This tendency has become more acute since 1959, when the process of opening the Spanish economy toward the exterior began, and is coincidental with the policy adopted regarding foreign investments.

8 The introduction of investment flows and of technology has been carried out over a long period, without a system for sufficient regulation. The legislation relating to foreign investments and the transfer of technology is marked by its liberality, both in the processes for contributing tangible and intangible assets, and in the mechanisms for returning the uses and excesses generated by the productive application of the same.

The antiquity of the basic norms is truly noteworthy: the law which regulates the Statute of Industrial Property is now 50 years old. This fact could contribute to the strangeness of the international LES meeting in Spain, and give rise to interpretations on the anachronistic outline of our economic and social organization.

A law which has stood up for half a century, in which the greatest scientific and technical transformations of recent history have taken place, could be considered to have some unique virtues. However, it would be excessive to affirm that the law has resisted the passage of time, and thus proves its worth. Rather, it should be affirmed that Spanish society resists with the same strength as in past centuries the adoption of modernity. This Spanish legislative situation expresses very well what sort of priorities are, in fact, established in economic activities.

Ordinary Values

In general terms, the profitable application of talent to production is part of the ordinary values of the European countries, while in Spain it lacks a real social legitimacy. Our great thinker, J. Ortega y Gasset, affirmed that "Europe is science, all the rest is common to the rest of the planet."

*PH Master of Engineering, INITEC, Madrid, Spain.

We must conclude that the full integration of Spain in Europe, culminating in the economic field, and revealed above all by the intensity of the commercial interchanges with the ECC, do not correspond to the capacity to contribute to this "science" factor, which

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one of our most lucid thinkers considered substantive of the European identity more than half a century ago.

The end of the digression leads us to refer to the maladjustments, already recognized, in this famous law: slight protection, the onus of proof resting with the titleholder, impossibility to patent substances, superficiality in the obligation to exploit patents, etc., all these tools to create an unfavorable framework for the creation and dissemination of new technologies. The internal incoherencies of the legal text lead one to suspect that they are "printing errors" (Diaz de Velasco), according to testimony collected by Professor Ber-Kovitz.

Critical Variables

Productive investments and technological contributions are critical variables of strategic importance in the economic panorama of a country. Undoubtedly, Spain lacked both factors, technology and capacity for financing and capitalizing, when the stage of economic opening-up began. The recourse to external contributions was a necessary measure and beneficial for the economic takeoff; it was also able to stimulate the rationalization of Spanish industries and potentiate their competitiveness.

But the implementation of this policy, without due regulation and control, meant accepting the spontaneous behavior of these strategic variables which have produced undesirable structures in a good part of the Spanish industry and economy. In the technological area, this tendency toward subordination with respect to external technologies has been widened by the weakness in internal efforts in investigation and innovation. This is reflected in the reduced amounts assigned to investigation projects and in the low return on investigative efforts. Until the end of 1973, practically no type of regulation existed for transfers of technology. In 1974, systematic activities were begun to register contracts, although with slight material and human means.

The lack of prior selection and study of the most suitable technologies, as well as the negotiation of a good part of the contracts without guaranteeing necessary compensations, induced a characteristic phenomenon in our economy; the slight capitalization of costs in the

acquisition of technology, the very limited assimilation of know-how, a situation which has merited the following judgment; Spanish companies do not buy technology, they rent it.

The slight aptitude for profiting from technologies developed in other latitudes and used in Spain, is one of the most significant black marks. Companies manage to dominate *production technology*, but do not penetrate into the know-how of the process or product and into design fundamentals. The problem is especially visible in the sectors of automotive and transport material, communications, electronics and electrical machinery, energy equipment, and the chemical industry.

Transnationals

The industries are frequently affiliates of transnational corporations which establish their commercial and innovative strategy on a worldwide level. The associated Spanish firms are receivers of technology from the parent company, and their avowed objective is to correctly manufacture a product which is already defined through a predetermined process. The dearth which exists in human resources with high qualifications does not permit a hope for the locating of investigation services in Spain by the multinational companies (except in some very few exceptional cases).

Scarcity of financing and the ever more competitive requirements of the market, have accelerated the mechanisms of the integration of Spanish firms in the multinational companies, although the very weak technological position has been the principal explicative variable.

In keeping with this situation, the rulings on foreign investments do not permit one to deduce any policy of selection, previous evaluation or marking of priority sectors and conditions. The instruments for registration are in a more rudimentary state than for contracting technology. The contribution of intangible assets is allowed as a patrimonial element in the participation in limited Spanish companies. The initial advantages of acquiring external capital has been converted, in many sectors, into factors which distort the market: appearance of over-capacity, lack of adaptation of technologies and productive dimensions, dependence on the commercial activity of exporting, and difficulties of integration in a global economic strategy.

For the sector which manufactures equipment, the slight accessibility to basic technologies or engineering and design result in fewer contributions to investment projects in Spain, and in foreign countries where there is participation. Shared-risk operations are very rarely carried out as principal contractor, save in conventional sectors.

THE POSSIBLE FUTURE

The characterization of Spain as a generally passive recipient of technology (and capital), which dominates the manufacturing technologies and which has brought about an economic and industrial development of great quantitative importance, is an illustration of the possible future position in the transfer of technology within the context of integration in the

European Community. Experts in the ECC have recently made an analysis of the future direction of community industry, which points out:

1. Innovative efforts are considered as having priority, to satisfy new needs in the markets themselves and to maintain *quotas* in the external markets.

2. The future of Europe is linked to its aptitude for maintaining a role in the forefront of technological developments in critical areas: energy, data processing, electronics, communications, transportation, environmental engineering, etc. This vision contrasts with official Spanish policy; thus the recent Medium Term Economic diagram (horizon for integration in the ECC) contains no reference to technology.

European strategists have made clear the appearance of new structures in the processes of innovation and the transfer of technology. In the European area, actions of a cooperative nature are being imposed, to set out projects for technological development in key sectors: new sources of energy, aeronautics, electronics, etc. This presupposes the need for very strong flows in the transmission of technology at its various levels of elaboration and operation.

Also, it is essential to have a progressive homogenization and interchangeability of technological levels and *strong points* of innovation in each country. This means the growing homologation of normative systems referring to generation, dissemination and ownership of new technologies (the European patent is a first step), as well as in the systems to normalize products. This directive scheme is valid to determine fields of activity where the most pressing common necessities are detected; for example, the lack of energy raw materials and non-energy ones.

Advances in the policy of cooperation in specific sectors of a strategic nature is simultaneous with a process to sharpen competition within the community markets and in worldwide commerce, which situate the technological factor as the fundamental productive input to achieve maximum competitiveness.

Optimize

The community countries try to optimize their position from the point of view of the transfer and assimilation of technology, using their own technological capacity to achieve ownership of highly complex processes. As a good example, we may cite the case of the French nuclear systems engineering company Frantone, which has served as a support for the effective grouping of nuclear systems for steam generating. The ceding company, Westinghouse in this case, accepted a level of commercial risk in exchange for the assurance of a continued receipt of new goods and services from a *technologically active* society. The increase in competition is converted into a propitious element for cooperation, which is only viable between "active" entities, at least in the area of developed countries.

On the other hand, the transfer of technology to the developing countries has seen some relevant changes. The delivery of complete "technological packages", in which are included multiple technologies and services of a secondary and conventional type, has been losing importance in favor of the transmission of basic process and product technologies. This corresponds to the

greater potential in qualified human resources within the receiving countries which, at the same time, are given a more diversified industrial infrastructure.

As the experts of the ECC recognize, we are witnessing a new international division of labor. New capital goods industries appear in areas different from the three great industrial powers (North America, Japan, EEC). In the declaration of the meeting of the IOUNO held in Lima, for the year 2,000 was established the objective of the participation of developing countries in the production of manufactured products of 25% of worldwide production, which corresponds to 15% for equipment.

Growing Potential

The long-term models made up show that the growing potential of the DC in the production of incorporated technology (equipment) is the necessary condition for the economic reactivation of the industrialized nations. It means overcoming traditional formulae in the transfer of technology (the turning over of the complete block) to acknowledge the advisability of mixed formulae with active participation by the receiver, and the collaboration of local industries and engineering services. This insures a more continuous and qualified demand for the new techniques.

Spain must set up its policy on technological transfers (in the position of a receiver) considering the present parameters of *growing competition*, *active cooperation* in innovation and transfer, homologation of normative European systems, etc. At the same time, facing the possible expansion of the sale of its own technology, it is necessary to be prepared to serve markets which are more demanding, which conditions the acquisition of know-how according to the possibilities of participation and assimilation.

The opportunities and necessities which can be detected in Spain, can be seen from the economic requirements in:

a) The restructuring of some large-volume industrial sectors: foundries, marine construction, etc. Spanish shipyards can recuperate their competitiveness by raising the technological content of their products when other competitive advantages disappear. Integrated and nonintegrated foundries need to undertake

huge investments whose profitability for the overall economy and as a source of employment, depend on the greater contribution of equipment with own technology. In Spain, foundry engineering does not exist as a separate activity, in spite of this being a competitive sector with regard to the ECC.

b) The solution for strategic problems in the program for energy, exploration for energy and non-energy mineral resources, the development of the data-processing industry sector, etc., which assumes very intense demands for technology.

c) In the next few years, Spain will have to define a long-term policy for transportation, with a choice of infrastructures, vehicles and more appropriate traffic, which will be needed by the assimilation of external technologies.

d) The sectors of agriculture and fishing, sanitation, pharmaceuticals, social equipment, industries related to the environment, etc. are areas of great potential starting from the transfer and assimilation of new technologies.

It is clear that in some cases these actions are possible by intensifying or initiating contributions to innovative projects within the ECC, and by being placed in a position to receive technology within a global policy of cooperation. Integration in the ECC could represent the great opportunity for the Spanish economy to profit from the superior technological capacity of the community countries, having available at once urgent measures regarding:

1. Judicial arrangements.
2. Formation of investigators and technicians.
3. Setting up of engineering systems companies.
4. Establishment of a financial system for innovation orientated toward assimilating external technologies.
5. Improvement in the overall setup of companies and in the specific process of innovative activities.

These could place Spain in the position of an active recipient qualified to be incorporated, on the medium term, in the process of growing cooperation, and not to be displaced in the European industrial markets because of its passive characteristics. However, this condition brings with it, without remedy, and on the long term, the pressing need for new technologies to be transferred.