

# Perspective on Third World Business

*Developing countries constitute large market for technology transfer; historical review of developed nations*

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This paper is intended to provide a historical perspective of technology transfer into developing countries in the last 15 years, to map certain visible trends in this process, single out major actors' of technology transfer among suppliers and recipients of technology, outline and describe basic problems which still exist in this area, and attempt to chart key issues and directions of technology flows in years to come.

The material which has been used to prepare this paper has been received, in the majority of the cases, from the Technological Information Exchange System (TIES) operated by UNIDO, from the experience of UNIDO's Technological Advisory Services (TAS), and from information supplied by developing countries.

212 We have also used, to the extent possible, some material published by *Les Nouvelles*, Journal of the Licensing Executive Society International.

## OVERVIEW OF TECHNOLOGY TRANSFER TO DEVELOPING COUNTRIES

The flows of technology to developing countries are effected by way of direct foreign investments, the supply of equipment, machinery and turn-key plants (embodied technology), setting of joint ventures, and licensing of patented or non-patented know-how.

Since this meeting was organized jointly with LES, this paper will deal predominantly with joint ventures and the supply of patented and non-patented know-how.

While probably the majority of the flows of technology are taking place by way of supply of equipment and machinery and by way of direct foreign investment, the supply of know-how or licensing, both in terms of absolute volumes as well as its importance as an effective vehicle for direct transfer of technology, has increased considerably.

Table 1 provides basic data on the growth of flows of technology (in form of royalty payments) in selected development countries in the period 1965-1981.

As can be clearly seen, the group of developing countries listed in the table imported in 1965 technology worth about \$200 million. Their imports increased in 1975 to about \$1 billion and in 1980 reached about \$2 billion.

\*Paper presented at the UNIDO/LES Joint Meeting, Vienna, Austria, June 1982.

(all payments in million US \$)

Country	1965	1970	1975	1977	1978	1980	1981
Argentina		115.8	78.0	37.9	157.9	581.8	579.9
Brazil	43	104.0					
Mexico	65.6	125.7					
Venezuela <sup>1</sup>	14.8		81.0 <sup>2</sup>				110.0
India		49.6 <sup>3</sup>					
Rep. of So. Korea		2.4	18.5	67.2	94.6		
Philippines							
Portugal		12.0 <sup>4</sup>	20.1 <sup>5</sup>	25.3	23.0	21.0	32.3
Spain	79.9	155.0	258.2	428.8	454.3		
1.- 1966							
2.- 1976	4.- 1972						
3.- 1969	5.- 1974						

Source: Data received from technology registries of countries surveyed.

Table 1

Even taking into account two devaluations of the dollar which took place in this period and an average world inflation rate, the increase in flows of technology is extremely impressive. It supports the theory that the developing countries are becoming more and more an important market for the technology developed in the industrialized world.

## Accelerate

While in 1965 their share in the world turnover of technology accounted barely to 8%, in 1980 it has reached the impressive 14% and is expected to accelerate even faster in years to come. This rapid growth can be attributed on one side to the overall economic growth, and on the other to industrialization efforts undertaken by the government in those countries.

Another important feature of technology flows to developing countries is the fact that those flows are decisively coming from transnational corporations.

It is estimated that while transnational corporations' share of the world technology turnover oscillates between 60-70%, it represents around 90% of the flow to developing countries.

In this context one should mention that a great deal of this flow goes into subsidiaries of transnational corporations, fully owned as well as majority and minority owned.

While originally in the process of technology transfer we used to deal with licensee and licensor, since early in the 1970s, one should add a new and important actor. That is the government.

This holds true for all major developing countries, although we witnessed an increasing role of govern-

ments in technology development and transfer as well as in industrialized countries.

The presence of governments in the technology transfer process constitutes an important feature of technology transfer in the late 1970s and appears to be even more visible in the 1980s.

### THE ROLE OF GOVERNMENTS IN THE TECHNOLOGY TRANSFER

As noted, the government is an important factor in technology flows to developing countries.

One should however not overlook that the role of governments, as an important economic stimulator, has been introduced in Europe and the U.S.A. in the years of the Great Crisis in the 1930s, and since then its role has increased.

There is also doubt that governments played a significant role in the rapid technological development of the U.S.A. and Western Europe in the years following the World War II (not mentioning the centrally-planned economies of the Soviet Union and other COMECON countries).

Postwar Japan went through a very strict control over the *imports of technology*, which only some years ago, was gradually removed.

Again it was the U.S.A. that by the end of the 19th Century introduced the first antitrust legislation which, at present, is being rigorously applied to regulate the conditions under which the transfer of technology takes place in the U.S. but also in the EEC countries and Japan.

As the developing countries began to realize that their desire for a better standard of living for their people and accelerated social and economic progress required a mobilization of resources by their governments, they began to gradually introduce policy instruments which ultimately led to a growing state intervention in the economy. Such growing role of the governments led, logically, into the regulation of both, *foreign capital inflows* and *foreign technology inflows*.

While at the beginning of those various regulatory measures they aimed primarily at the protection of the national industry, with the passage of time and with the experience, they gradually evolved into more complex technological policy, aimed at the development of a national technological base.

As we deal with technology transfers at this meeting, let us outline major and direct conditions which lead to regulatory measures in this area. Those are:

- The outflow of foreign exchange in the form of technology payments.
- The conditions of technology transfer transactions.
- The need to secure relative technological independence by those countries.

The condition of introduction of regulatory measures seem, still today, major problem areas for the flow of technology to developing countries.

One should not overlook, however, the fact that the regulatory measures by developing countries, also in this area of technology flows, were based on the experience and examples of such countries as Japan, U.S., and all of Europe.

### OVERVIEW OF MAJOR PROBLEM AREAS OF TRANSFER OF TECHNOLOGY TO DEVELOPING COUNTRIES

It seems both from the literature and direct contacts with licensors and licensees that the following will appear to be major problem areas in the flow of technology to developing countries:

1. Regulatory measures introduced by developing countries.
2. Issues related to pricing of technology.
3. Lack of information at the end of would-be licensors and would-licensees.

Let me describe in more detail all of the above outlined major problem areas.

No doubt that the regulatory measures introduced by the governments of all major importers of technology among the developing countries touched the wave of bitterness and protests at the side of suppliers of technology.

These problem areas could be divided into two major categories:

1. Interpretation of restrictive practices.
2. Active role (in some cases) of governments in contract negotiations.

As regards interpretation of restrictive business practices, in our view at least, it follows rather closely the interpretation applied by courts in all countries with antitrust legislation although on different grounds.

While the purpose of the antitrust legislation is to prevent one party from ascertaining monopolistic market positions and thus harm the consumers, the developing countries are attempting to protect their own industry, a "consumer" of technology supplied often by monopolistic or oligopolistic licensors.

As an illustration of similarities in the interpretation of the most obvious restrictive business practices, please find data in Table 2.

Another area which naturally causes lots of problems is the overall and perhaps eternal question of pricing of technology where usually the licensee charges that the licensor is overpricing, either directly or indirectly.

UNIDO is not in a position to solve this problem, nor regulating measures of governments being in a position to put down the price by an artificial setting of royalty rates.

In some UNIDO publications\* we have proposed certain methods of royalty and payment appraisal based on expected profit the licensee is likely to make on a basis of acquired technology. We believe that those methods give a fair deal to both parties.

The UNIDO's Technological Information Exchange System (TIES) is also designed to assist the developing countries obtain fair bargains. On the outset, it seems that although this area will remain full of "problems" in terms of individual transactions, on the whole situation has been improved gradually over the last 10 or 15 years.

The major problem in our view will remain, however, as far as it concerns the lack of information on would-

\*See for example: ICIS/51; ID/223.

Type of restrictive provisions	US	COLOMBIA	MEXICO	PHILIPPINES	JAPAN	INDIA	PORTUGAL	SPAIN	EEC
TIE-IN	illegal "per se"	illegal	illegal	illegal (exceptions possible)	illegal (acc. F TC guidelines)	illegal	illegal	illegal	illegal in princ.
Restriction on Licensee's right to deal in Competitors' Product (TIE-OUT)	illegal "per se"	illegal	illegal	illegal	illegal (with exceptions)	illegal	not ment. specif.	illegal	illegal
Mandatory package licensing	illegal in princ.	not ment. specif.	not ment. specif.	not ment. specif.	not ment. specif.	not ment. specif.	not ment. specif.	not ment. specif.	illegal
Post expiration royalties (patent + license)	illegal "per se"	illegal	illegal	illegal	not ment. specif.	in princ. illegal	not ment. specif.	not ment. specif.	illegal
Price fixing restrictions	virtually illegal "per se"	illegal	illegal	not ment. specif.	illegal	in princ. illegal	illegal	illegal	illegal
Quantity of volume restrictions	US Dept. Justice illegal "per se" Court decision varies	illegal	illegal	illegal	not ment. specif.	not ment. specif.	illegal	illegal	not ment. spec.
Territorial restrictions	determined by rule of reason	illegal	illegal (exceptions possible)	illegal (exceptions possible)	may be declared illegal	illegal in princ.	illegal	illegal in princ.	illegal

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Source: National Legislation of Selected Developing Countries; National Approaches for the Acquisition of Technology - ID/187

Table 2

be licensors and licensees, starting with general information on the country of either of them and ending with details on licensed technology.

We believe that mutual prejudices and the simple lack of knowledge and information is causing major problems which we believe LES is in a position, in joint effort with UNIDO, to solve over a period of time.

#### CONCLUSIONS

As indicated earlier, UNIDO is of the view that a continuous dialogue between LES and the developing

countries in such a form as today's meeting contributes toward the gradual elimination of problem areas in flows of technology to developing countries.

We hope that this meeting, following earlier discussions in New York, Lisbon and Helsinki, will be continued and that by the joint effort of technology transfer will contribute toward a better mutual understanding and economic progress.

In our view the developing countries constitute the largest potential market for technology in years to come. Mutual interdependence will force such exchange even more in the future.