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REGULATORY PRACTICES ON TECHNOLOGY ACQUISITION
IN DEVELOPING COUNTRIES: AN OVERVIEW

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INTRODUCTION

The issue of technology transfer and its role in overcoming backwardness of developing nations in Africa, Asia and Latin America has dominated the international political debates since the mid-sixties. Contrary to some expectations of gradually decreasing interest of the international community, it has regained importance in the eighties with a clear perspective of maintaining top priority throughout the next decade. Such revival could be principally linked with the recent wave of technological revolution which brought about a widespread diffusion of the so-called new technologies, showing enormous potential for being effectively implemented not only in developed but also in developing regions.

In view of the unsatisfactory and quite often harmful effects of international technology transfer, accomplished through traditional market channels, many developing countries have formulated their national (and sometimes also regional) technology transfer policies as well as established legal and institutional mechanisms for their implementation. As a result, a valuable experience has been accumulated in technology transfer regulation over the last 20 years. What is more important, in this field one might identify unique characteristics of regulatory practices, i.e., the ways the government affects operating business environment, which are not found in other areas. They were reflected, inter alia, in a very broad scope of government involvement, which in some cases played the role of a "third party" in international technology transactions. From the institutional perspective, one should mention the establishment of specialized government agencies having very broad prerogatives and dealing specifically with technology transfer regulation.

The main objective of this study is to evaluate the regulatory practices in the field of technology transfer within the North-South context. Unlike typical approaches prevailing in the literature - which concentrate on the formal aspects, i.e., existing laws, official policy declarations and prerogatives of institutions involved - we shall primarily deal with regulatory practices which are often being referred to as jurisprudence. Herewith, we have generally in mind the ways the laws are being interpreted and effectively applied. More specifically, we shall be dealing with functional rules and procedures of the respective government agencies and their operating practices, ways of handling detailed issues, etc. Although existing laws provide a basis for regulatory actions, such practices are being primarily reflected in the day-to-day activities of specialized government agencies, eventually sanctioned in the lower rank normative acts. Over 30,000 technology transfer contracts being scrutinized by the National Office of Industrial Property (INPI) of Brazil during last 15 years might well exemplify the volume of practical knowledge and experience being available, at least in some developing countries.

Despite growing recognition of the need for evaluating actual practices rather than concentrating on the formal regulatory framework, the former approach did not receive adequate attention within the context of general debates on the scope, directions and effectiveness of technology transfer policies in developing countries. This might be viewed as a serious shortcoming of such debates bearing in mind the following:

- technology transfer proved to be a very complex and multi-dimensional process so that many essential modalities could not be accommodated in the formal regulatory framework. Consequently, the transformation of

the existing laws into regulatory practices - especially in those countries, where broad discretion was granted to the relevant government bodies - has to be interpreted as the actual shaping of the relevant policies. Such assessment seems to be fully justified, if the government intervention is being perceived from the perspective of the microeconomic agents, i.e., foreign supplier and local recipient of technology;

- in many circumstances the changes in the regulatory practices are being used by the recipient governments as the substitute for a more fundamental adjustment of the legal and institutional framework. Despite some obvious shortcomings, this method proved to be more practical, while allowing flexible reaction to the external and internal turbulences.

The study does not attempt to provide comprehensive inventory of the regulatory practices of developing countries on technology transfer. It rather concentrates on key problems in the regulatory process and alternative institutions. As a general rule a pragmatic approach has been adopted throughout the study. Specific regulatory measures are always discussed in the context of their real effects rather than formal declarations and intentions. The analysis relies predominantly on the experience of those developing countries which actively participate in the UNIDO TIES (Technology Information Exchange System) co-operative network.

The study consists of four parts. Chapter I discusses the practical consequences of embarking on the regulation of imports of such complex "commodity" as a technology. In Chapter II, functional and operational experiences of the government institutions, labeled as technology transfer registries, are being evaluated. Chapter III deals with the practical ways of handling contractual conditions of

technology transfer relating to remuneration and restrictive practices. In the final part, an overall assessment of regulatory experience of developing countries in the field of technology transfer in the seventies and mid-eighties is being offered, together with the analysis of prospective trends in adjustment of the regulatory mechanisms towards the end of the century.

I. TECHNOLOGY TRANSFER AS A SUBJECT OF REGULATORY PRACTICES

1. Main categories of technology transfer transactions

Defining precisely the subject of regulation has become one of the most crucial and probably most difficult problems in formulating and implementing technology transfer policies in developing countries. The reason was quite obvious. For all parties involved (i.e., relevant government bodies, recipient and supplying firms) it was of utmost importance to clearly establish the rules as to what aspects and forms of economic activities are to be regulated. Thus, despite the inherent complexity and diversity of forms and channels of technology transfer, extensively debated by the academic community, the policy-makers had to introduce precise definitions relating to categories of transactions, which were subject of screening and registration under the technology transfer laws.

Initially, the question of control of technology transfer process from the recipient country's perspective has been primarily related to the licensing agreements. In the narrow sense, the term "licence" implies transmission of industrial property rights, i.e., the right to use certain expert knowledge or know-how. In the context of international technology transfer, the licensing contract is being interpreted in a broader way as to cover transmission of certain expert knowledge and the right to use it. Thus, the licences for transmission of property rights are only

considered as being of lesser importance for developing countries, although in quantitative terms their relative share is quite substantial (e.g., trademark licences). The concentration of the government intervention on the licensing agreements can be attributed to the fact that under imperfect conditions on international technology market, such agreements have been seen as a major instrument for exerting excessive fees by the suppliers as well as imposing various restrictive measures bearing negative consequences for technology recipients.

On the other hand, in the seventies, when the implementation of technology transfer legislation in developing countries gained momentum, there was a clear understanding that technology is being transferred through various channels and its impact is much broader than the transmission of property rights only. This, in turn, resulted in various attempts to cover wider spectrum of technology transfer transactions.

Although some developing countries stucked principally to the narrow approach (i.e., the concentration on licensing contracts only), yet the prevailing trend was to achieve a "right" combination of two approaches. Under the latter concept, licensing agreements were always seen as the most essential technology transactions. As a result, detailed regulatory principles and jurisprudence have been primarily developed with the view of licensing agreements. Consequently, comprehensive experience has been accumulated in this field. At the same time, attempts were made, usually with some delay, to extend the scope of regulation on service contracts and other transactions as well.

2. Regulating embodied technology inflows

So far, the acquisition of machinery and equipment still represents the most important channel of technology

transfer into developing countries. However, the attempts to extend regulatory procedures as to cover the so-called "embodied" transfers are very limited and rather discouraging. For example, the Nigerian Law of 1979 explicitly identified the purchase of plant and machinery as the arrangement being the subject of technology transfer registration. The early attempts in the implementation of the said law by the National Office of Industrial Property helped to reveal major problems and bottlenecks in this respect. They originated, inter alia, from the evident overlapping of regulatory responsibilities of several government bodies dealing with the same issue and especially with the agency issuing import licences. Consequently NOIP adopted a revised interpretation of the Law of 1979, according to which purchase agreements involving the imports of machinery and equipment against import licences need not to be submitted to the Office unless the contract involves the employment of foreign personnel.

3. Regulating technological service transactions

Unlike rare attempts to cover purchases of machinery and equipment, the extension of technology transfer regulations so as to cover various foreign inputs like training, engineering, provision of documentation, management, consultations, etc. - which are typically covered by the term "technical assistance" - has been widely recognized by a great number of developing countries, especially in Latin America. Although on the surface, this might be considered as a slight modification of the licence-focused procedures. It brought far-reaching consequences in terms of day-to-day operations of the government regulatory bodies. Firstly, even in the case of the broad meaning of the term "licensing agreement", the principal elements of such contracts were clearly defined and, accordingly, standard rules and procedures of evaluation, registration and monitoring could be adopted.

This was not the case of the so-called technical assistance agreements.

Secondly, there is a full range of arrangements failing within that group and despite serious efforts, no widely accepted classification of service agreements has been developed yet. Thirdly, the formulation of principal elements of such contracts differed substantially from the licensing agreements. Taking payment conditions as an example, the fee structure is either substantially modified (management agreement) or based on an entirely different concept (e.g., personnel fees in the consultancy agreements). Fourthly, the inclusion of technical services substantially broadened the number of contracts being subject to registration procedure, which imposed additional requirements as to the experience and qualifications of government staff involved in the evaluation, registration and monitoring of technology inflows.

Thus, by adding technological services, government regulatory bodies have been confronted with serious problems. They were lacking adequate procedures as well as additional professional staff to deal effectively with such agreements. Moreover, it was practically impossible to avoid loopholes in the regulatory framework so that firms could easily avoid direct intervention of the government agencies, responsible for controlling technology inflows, while concluding technical service agreements.

The practical responses undertaken by various regulatory agencies in developing countries might be divided into two major groups. Firstly, the most experienced technology transfer registries, handling large number of service contracts, have embarked on devising detailed domestic rules and procedures in order to deal with specific technical service agreements (e.g. management, training) or its principal elements (e.g., level of personnel fees).

Secondly, it was also attempted to define more precisely the scope of regulation as to eliminate the agreements of minor importance, where the government approval was deemed unnecessary or even having detrimental effect (e.g., in the case of ad-hoc trouble-shooting services, repair of machinery, etc.). For example, the Peruvian regulations stipulate clearly that any sporadic and short-term services, which do not constitute a supply of technical data and which are paid for with a fee or tariff independent of the volume of production or sales, are not subject to registration. Alternative ways of narrowing the scope of registration are reflected in the establishment of the minimum ceiling for the value of technology payments (10 million pesetas in the case of Spain) or contract duration (18 months in the case of Ghana).

Despite above-mentioned efforts, the extension of regulatory procedures towards technical service transactions is far from being fully accomplished even by the most experienced technology transfer registries. Licensing contracts still dominate as a distinct category to which relevant procedures are predominantly addressed to. The technical service transactions remain as a "grey area" of technology transfer regulation, where the lack of experience and well established procedures coincide with some doubts, raised by the business community as well as the government officers, as to the viability and meaningful effects of government controls in this field.

4. Dealing with "package" transactions

In addition to the previously discussed difficulties in defining the subject (scope) of regulation, another serious problem in a day-to-day regulatory practices resulted from the fact that technologies are being transferred under various "packages", combining tangible and intangible assets, equity, external financing, etc. Let's firstly

consider the arrangements covering exclusively the transfer of intangible assets. Herewith, one might point out the wide application of the composite agreements for the supply of various technological inputs, like e.g., "licensing and technical service agreement". On the other hand, such "packages" are often splitted into separate but interlinked agreements, e.g., know-how and trademark licence combined with management and technical services. Under such contractual set-up, the regulatory agency might not be able to adequately evaluate the combined effects of all agreements in the package, especially if they are deliberately submitted for registration at various time intervals.

So far, the procedures for dealing with such contract "packages" or combinations have not been clearly defined. However, the most experienced registries require reference data on all related agreements for cross-checking and evaluation of combined effects.

A more complicated problem in the regulatory practices arises when disembodied technologies represent only small portion of the large investment package combined with credit arrangements and/or with foreign equity participation. As a rule, host government bodies (those dealing with the industrial development programmes, direct foreign investment, external financing, etc.) are being involved in the decision-making process already at the preparatory stage. Under such circumstances, the intervention of technology transfer registry at the later stage, when the relevant contracts are being negotiated, is rather impractical due to the fact that before the final acceptance of the deal by the foreign partner, bank financing the project, etc., the preliminary clearance of all subordinated contracts is being usually required. The analysis of the experience accumulated in that field points to the incidence of alternative arrangements, under which - in the case of

complex deals - standard regulatory procedures are substituted by the informal intra-government consultations with all agencies responsible for various aspects, starting from the pre-investment stage of the project cycle.

II. FUNCTIONAL AND INSTITUTIONAL ASPECTS OF TECHNOLOGY TRANSFER REGULATION

1. Forms, directions and scope of government intervention in technology acquisition process

The government actions affect technology transfer in a variety of ways. Since technology becomes an indispensable component of the industrialization programme, the role of the long-term development and industrialization strategies should be mentioned in the first place. A great number of developing countries formulated detailed policies, directly affecting technology development and transfer. In the present study, we concentrate primarily on direct and practical ways of regulation, which are being accomplished in a great number of developing countries by specific government agencies by means of performing following major regulatory functions:

- evaluation and registration of technology transfer agreements;
- promotion and advisory services for local enterprises in the acquisition of technology;
- monitoring of the implementation of technology policies and formulating proposals for necessary policy adjustment.

The scope of regulation, i.e., the degree of government involvement in the decision-making process on technology transfer, varies greatly among developing countries. This might be principally attributed to the fundamental philosophical differences as to the strategy of development, organization of economic activities and the role of

government in general. They are also reflected in the overall orientation of the regulatory actions. In some countries, the major emphasis is laid on adequate controls of technology inflows, whereas other countries concentrate on promotion and assistance to the local companies acquiring technology.

Within the given country, the regulatory practices are substantially diversified as well. In the analysis conducted so far, we have clearly demonstrated that the scope of regulation has been greatly differentiated, depending on the type of contractual arrangement covering technology transfer. The economic sector or industry branch represented another differentiating factor in the regulatory practices in technology transfer in developing countries. As a rule, the relevant laws have been applied to all sectors, but in some countries, specific sectors have been excluded (e.g., extractive industries, agriculture).

For obvious reasons, the attention of the regulatory agencies concentrated on the manufacturing sector. The relevant procedures attempted to reflect the development priorities, established in individual countries with respect to specific sectors and industry branches. In the most recent years, a growing number of developing countries have been including in their priorities the so-called new technologies typically concentrated in a few high-tech industries and finding widespread applications throughout the economy. In the latter case, the regulatory practices are aimed at ensuring wider access and fast assimilation of such technologies.

Finally, we should point out another aspect, affecting the scope of regulation, namely the incidence of equity relationship between supplier and recipient of technology. In the case of arm's-length transactions, government involvement has been typically by much stronger and actually

dominating position of the supplier on international technology market. In equity-linked contracts, the government intervention has to be much deeper as the market forces are practically non-existent. This line of thinking has been reflected in more rigid procedures and policies, either clearly prescribed by law or demonstrated in the regulatory practices implemented by technology transfer registries.

2. Performing major regulatory functions

2.1. Registration of technology transfer agreements

This function definitely represents the cornerstone of the regulatory process in the field of technology transfer. Although other functions are sometimes performed without registration, the administrative authority and resulting leverage of government agencies vis-a-vis foreign and local business partners can be principally adhered to the obligatory compliance with the registration procedure.

The analysis of the relevant experience of a number of developing countries shows again a great diversity of existing arrangements as to the scope and orientation of evaluation and registration process. For the purpose of systematic analysis only, three types of registration can be distinguished, starting from the lowest to the most comprehensive scope of government intervention.

a) registration for recording purposes only

Herewith, companies entering into technology transfer agreements with foreign parties are requested to submit the copies of the contract together with additional basic information. Except for the formal registration (which, however, gives the local company the right to remit payments), there is no intervention on the part of the government. Argentine regulations on agreements concluded

between unrelated parties might well serve as an example of the registration for information purposes only.

In view of the extremely limited scope of government intervention, direct effect of such recording (e.g., for improving contract conditions) are practically negligible. Moreover, however, that this provides a background for performing, on a limited scale, of other functions like selective monitoring payments of licensing fees as well as the analysis of nationwide or sectoral trends in technology transfer. It should be emphasized that recording requires only limited number of clerical staff for processing relevant documents and issuing registration certificates.

b) contract-focused registration

In this case, the registry evaluates the agreement in order to establish as to whether the relevant clauses comply with the existing laws and/or lower level normative acts and guidelines issued by the registry itself. Although in addition to the contract documentation companies ought to submit a questionnaire containing information on project data as well as the analysis concentrates predominantly on the contract clauses. The registries look in the first place into the clauses defining payments, duration, governing law, clauses of restrictive character, clauses necessary to protect the interest of the recipient, etc. In most cases, the contracts which do not comply with the existing regulations are not rejected but sent back to the recipient for renegotiation.

From the view of the organization of the registration process, it is essential that the evaluation might be standardized and accomplished in a relatively short period of time by a small group of personnel, e.g., 3-7 professional staff.

c) project-focused registration

Herewith, the evaluation goes much beyond the contract itself and concentrates on the implementation of investment project the given contract is linked with. The underlying idea for such an approach is that the planned effects to be achieved through contract implementation will constitute the principal background for evaluation instead the formal clauses themselves. As a result, registries look very closely into technological aspects, economic and financial results, and finally into the strictly legal aspects.

Undoubtedly, the project-focused evaluation provides the most comprehensive framework for taking relevant decision from the overall development perspective. However, registries embarking on the project-oriented evaluation have been confronted with many problems of organizational and functional character. Firstly, the comprehensive set of project data to be abstracted from the feasibility study is required from technology recipient. This immediately poses serious problems, as the latter is quite often not prepared to supply such data. As the experience has also shown, the quality of project data contained in the background documentation leaves much to be desired.

Secondly, unlike the previous types of registration, the project-focused analysis requires functional and/or sectoral specialization of the registry staff. In most cases, functional specialization prevails and the technical, economic, financial and legal aspects are being evaluated by separate registry units. On the other hand, the technical and economic issues in technology agreements as well as relevant development policies are very much industry- or sector-specific, which calls for some degree of sectoral specialization in the registration process. So far, the functional specialization has definitely prevailed among registries but in some cases, e.g., in Nigeria, a matrix

pattern has been adopted, where each of the functional departments is assigned a particular industrial sector.

Last but not the least, the project-oriented evaluation becomes a time-consuming and skill-intensive operation. Obviously, this contradicts a general trend towards simplification and speeding up of all administrative procedures in the host developing countries.

While investigating the experience of individual developing countries, one might easily identify those, which generally conform with one of the types of registration mentioned above. Others, however, might be placed somewhere between those basic categories, e.g., between simple recording and contract-focused as well as between contract- and project-focused registrations.

2.2. Relationship with the local business community

The relationship between firms-recipients of technology and the regulatory agencies has undergone major transformation over the last twenty years. While evaluating the experience of the early seventies, one should refer to the overall conditions of the North-South technology transfer, prevailing at that time. They were characterized by the widespread evidence of the excessive payments and restrictive practices. This resulted, at least partially, from the fact that in the majority of cases, the technology transactions were concluded between parent and subsidiary companies.

Although not always explicitly formulated in the national laws and regulations, for obvious reasons, the regulatory agencies differentiated their attitudes toward technology recipients depending as to whether they were independent local firms or subsidiaries of transnational corporations. Originally, with respect to the latter

category, the government intervention has been justified by the apparent non-existence of a truly local party in the intra-firm technology contracts. As a result, the government had to resume the role of the "third party", reinforcing national interest, both at the micro- and macroeconomic levels. Thus, the relations between the local subsidiary acquiring technology and the government agency were dominated by the apparent conflict of interests.

However, in the course of time such attitudes have evolved gradually. Technology transfer registries realized that the interests of the parent and the subsidiary companies need not to be identical, especially in the decentralized corporations. The latter showed, in the most recent years, much greater flexibility and responsiveness to the host country's requirements. Moreover, despite obvious conflicting positions, the areas of convergency of interests have widened, just to mention placing nationals on key executive posts or implementing comprehensive training programmes in the subsidiary companies in developing countries. Nowadays, while striving to protect the national interest, government agencies are more and more inclined to look for common goals and promote activities which offer long-term benefits for all parties involved in the technology transfer process. The results of such policies proliferating in the eighties are rather promising, especially in expanding exports of manufactures and shifting R+D activities to the subsidiaries in developing countries.

With respect to the relationship with independent local recipients of technology, the background assumption was always made that local firms are weaker partners, while dealing with foreign technology suppliers. Consequently, the government intervention becomes indispensable for strengthening the bargaining power and protecting the interests of the local party as well as the interests of the country as a whole. On the surface, this would imply a

far-reaching convergency of interests and result in close co-operation between the government and the local business community.

Unfortunately, this has not always been the case. It happened quite often that rigid administrative procedures and controlling measures were perceived by the local business community as an additional red tape, delaying the acquisition process. The unexperienced technology buyers tended to underestimate the negative implications of some restrictive clauses or payment conditions and they did not support requirements imposed by the government agencies. In the most extreme cases, local buyers secretly collaborated with the suppliers in order to win the final approval of the contract.

In the eighties, a gradual shift in the relationship between the government agencies and the local buyers might be observed. This coincided with placing emphasis in many countries on promotion, information and advisory services and training of local businessmen. An attempt was made to equip local partners with the necessary experience and techniques so that they could better defend their interests. As a result, the co-operation and mutual understanding between the respective government agencies and business community have improved substantially.

The contacts of technology transfer agencies with the state-controlled companies were typically of a more complex nature. As a rule, the former intervened in the acquisition of technology in connection with the implementation of major investment projects in the extractive industries, agriculture, infrastructure, public utilities, etc. In such cases, various government agencies were involved in the decision-making process since the early stages of the project cycle. Technology transfer registries usually made their recommendations on the technological aspects, but the

registration procedure was modified as to allow consultations with other government agencies.

2.3. Monitoring

For the sake of clarity, the monitoring will be defined as a set of measures undertaken by the respective government bodies aimed at controlling and evaluating the effects of implementation of technology transfer. While resuming the monitoring functions, the governments attempted to move from static registration to the dynamic intervention in the technology transfer process. The scope and complexity of the monitoring activities are closely related with the type of registration adopted in a given country. On the other hand, clear distinction has to be made between the so-called micro-monitoring and macro-monitoring.

a) micro-monitoring

Herewith, we have in mind the controls of the implementation of individual agreements. In the simplest form, the micro-monitoring is being conducted by the central bank or other financial authorities controlling the remittance of technology payments. Ad-hoc monitoring relating to specific contracts is being often conducted on a case-by-case basis. More formalized procedures have been introduced in some countries. Firms applying for extension or amendment of existing agreements have to submit data on the effects of technology acquisition during the initial period. Very few countries, especially those conducting project-focused registration, imposed general requirements on submission of monitoring reports on regular basis from all technology recipients. Even then, the evaluation is usually limited to the sample of contracts.

b) macro-monitoring

Macro-monitoring relates principally to the evaluation of general trends and aggregated effects of technology acquisition over a longer period of time. Even with the simple recording of contracts, it is possible to identify the total number of contracts registered, their sectoral and geographic distribution, total payments, etc. For policy formulation and/or adjustment it is of utmost importance to evaluate aggregated effects of technology acquisition on employment, exports, imports, manpower development, R+D, etc. However, technology transfer registries have been confronted with major barriers. Firstly, the staff, being usually preoccupied with the day-to-day registration, was not able to conduct statistical analysis based on individual monitoring reports. Secondly, the quality of data submitted by technology recipients left much to be desired and could not be used without further verification. As a viable alternative, irregular and/or sectoral surveys are being conducted in order to meet specific requests.

It might be emphasized, however, that the recent progress in computerization of the registry information systems might greatly facilitate the performing of the monitoring function. This has been already reflected in some countries which have begun to publish, on a regular basis, official registry reports presenting aggregated figures on technology inflows and their effects.

3. Institutional set-up and co-ordination

The establishment of the adequate institutional framework for regulating technology transfer represents one of the most difficult problems the respective governments in developing countries were confronted with. Two conflicting directions might be identified in this matter. Firstly, technology acquisition represents a very complex process and

has to be seen within the broader framework of development policies. This calls for close co-ordination of technology regulations with:

- industrialization programmes in general. Herewith, the broad industrialization objectives and priorities with respect to specific industries and even projects have to be taken into consideration while regulating technology inflows;
- technology development policies. It is obvious that technology acquisition has to be well co-ordinated with indigenous effort;
- foreign economic policies. Technology acquisition in the narrow sense, i.e., covered by technology transfer agreements, has to be always viewed in connection with other foreign inputs like external financing, direct foreign investment, imports of machinery and equipment, etc., as well as take into consideration such issues like expansion of exports and foreign debt.

On the other hand, it became obvious that the functional and organizational arrangements should facilitate efficient handling of regulatory, and more specifically, registration procedures without excessive red tape. In this context, it is worth mentioning that several countries introduced "one window" policies under which foreign investors might obtain all necessary government approvals in one place.

So far no clear trend has emerged as to the institutional arrangements for technology transfer regulation in developing countries. As a result, a great variety of regulatory agencies, which might be qualified as "technology transfer registries", exists in this region. They differ as to the level of placement within the government hierarchy, size, scope of responsibilities, links with other government bodies, etc. It is therefore

impossible to offer comprehensive and systematic analysis of institutional arrangements for technology transfer regulations in developing countries. Two aspects should be pointed out which, in the author's opinion, might gain wider application in the future.

Firstly, for registries embarking on comprehensive, project-focused monitoring, there are substantial benefits of combining evaluation of two closely interlinked foreign inputs, i.e., direct investment and technology transfer. In fact, in a number of developing countries foreign investment proposals and technology contracts are nowadays screened by one government office.

Secondly, the apparent conflict between the efficient evaluation and registration, on the one side, and the need for intra-government co-ordination, on the other, might be at least partially resolved by dual arrangement, under which the relevant procedures are being conducted by the technical secretariat attached to one of the ministries whereas final approvals, policy formulation and adjustment are made by inter-ministerial board, composed of the representatives of various government agencies.

III. REGULATORY PRACTICES AFFECTING THE CONTRACTUAL CONDITIONS FOR TECHNOLOGY TRANSFER

1. Introduction

As it has been stated before, the regulatory practices differ substantially among developing countries and this has been particularly expressed in the diversified approaches to the specific contractual provisions affecting the commercial conditions for technology imports. In this section, we shall concentrate on two issues only, i.e., payments and restrictive practices in technology transactions. The reason for selecting those issues seems to be quite obvious. They

are widely recognized as the most controversial ones, not only in the business negotiations but also in international debates on the patterns and principles of North-South relations. It is worth reminding that drastic abuses in those areas were actually a triggering factor for establishing legal and institutional framework for regulating technology transfer flows, especially in Latin America.

2. Payment conditions

2.1. Historical background

The empirical surveys conducted in the late sixties and seventies revealed numerous cases of licensing fees going as high as 10% or even 20% of the sales value, often without effective transmission of know-how. Such unfavourable agreements were mostly concluded between parent and subsidiary companies. Although the excessive payments were mainly identified in the licensing fees, they were also found, at the later stage, in other contractual arrangements and payment methods.

2.2. Structure of licensing fees

The licensing fees are being usually expressed in the form of lump-sum, royalty or combination of both. As a rule, technology transfer registries attempted to discourage lump-sum type, while favouring the running royalty concept. It was believed that lump-sum or "disclosure fee" allowed payments for technology which may not be implemented yet, whereas the royalty is based on the idea of sharing with the licensor the gains from manufacturing operations based on imported technology.

With respect to the basis for calculating royalties, there was a widespread uniformity of using the net sales

volume. The major advantage of this formula is that it allows for easy auditing and is not open to deliberate distortions. The incidence of alternative methods was quite limited. Sometimes registries insisted on using as a basis the value added figure or export sales only. A standard practice adopted in Nigeria required that royalties should be based on net sales, excluding landed cost of imported raw materials and components. This was made in order to encourage both partners to raise the level of local value added by making more use of local inputs.

While generally preferring royalty payments, technology transfer registries, as a rule, strongly discouraged fixing minimum royalty level as this contradicted the principle of sharing the gains from effective manufacturing operations.

2.3. Defining the "adequate" level of royalty payment

The analysis of historical experiences helps to identify two major stages in the relevant regulatory practices:

- the initial stage, characterized by the prevailing use of a 5% ceiling for royalty rates;
- the mature stage, characterized by the application of more sophisticated methods.

The newly-established regulatory bodies were usually confronted with the excessive royalties in the contracts concluded in the past. In order to achieve a major breakthrough in eliminating the most abusive cases, they attempted to introduce a clearcut limit on percentage royalty rates. The 5% ceiling has emerged as a widely accepted standard. In fact, it was not defined by a specific legal provision but rather emerged as an informal principle or internal rule, sometimes identified in the official documents published by the government agency regulating

technology inflows.

In addition to the 5% rule, applicable to the full-scale licensing agreements, some registries applied somewhat lower ceilings for agreements granting rights only, e.g., trade mark licences, franchises, etc. In such cases, although no unified clearcut patterns emerged, the "adequate" fee level ranged from 1% to 3%.

The effect of the widespread application of the 5% rule has been enormous. The empirical surveys, conducted in a number of developing countries, have shown a substantial drop in royalty levels during last 15 years. At present, royalties exceeding 5% are quite exceptional in the North-South context and are generally comparable to those applied among developed countries. Indirectly, the 5% ceiling has greatly facilitated negotiation and approval procedures, due to the fact that the excessive demands of suppliers were trimmed prior to submission of agreements for registration.

A word of caution must be added here. It seems quite obvious that suppliers of technology were able to partially recuperate "lost" revenues by overpricing equipment, intermediate inputs and raising technical fees, especially in the case of intra-corporate transactions.

In the course of time, the apparent benefits of using standard 5% rule have turned to its principal shortcomings. This has been reflected especially when the given country attempted to stimulate the development of modern industry branches through assimilation of sophisticated technologies. The use of standard royalty ceilings obviously contradicted the implementation of such selective policies. As a result, there was a need to identify alternative ways of evaluating payments in technology transfer agreements. Although an impressive number of such methods could be found in the

literature, only few of them paved their way to the actual practice.

Among them, the income-sharing concept should be mentioned in the first place. The relatively widespread use of this concept must be attributed to the influence of UNIDO, which has popularized it in the numerous publications. The basic formula rests on the modified expression of royalty:

$$\text{ROYALTY ON SALES} = \frac{\text{LICENSOR'S SHARE OF LICENSEE'S PROFIT (LSLP)}}{\text{LICENSEE'S PROFIT ON SALES (POS)}}$$

This allowed for adopting a more thorough and flexible evaluation procedures for defining the acceptable level of payments. The above-mentioned expression clearly demonstrates that a very high royalty may not be viewed as excessive and abusive when the licensee achieves healthy profit margin from its operations. It is therefore important, in the course of evaluation and approval, to look not only at the royalty level but also at the distribution of profits between the parties, i.e., the licensor's share of licensee's profit (LSLP).

Although the profit-sharing concept has been used by a number of technology transfer registries, no standard concept with respect to LSLP has emerged so far. In fact, LSLP analysis played an auxiliary role allowing, e.g., for approving contracts with high royalty rates in highly profitable operations or rejecting contracts with standard rates but yielding low profit margins.

What is even more important, however, the profit sharing analysis represented a radical shift from contract-focused towards comprehensive project-oriented evaluation. While the royalty rate was clearly stipulated in

the contract, in order to calculate LSLP the registry had to identify the estimated sales and profits of the planned investment project. The need for obtaining additional information seriously complicated the registration procedure and represented a major obstacle in applying this formula.

The indirect implications of the income-sharing concept on the proliferation of more flexible attitudes with respect to royalty rates should be mentioned as well. Firstly, since the average profit margins were mainly industry-specific, this actually led to the acceptance of different royalty levels for different industries. It coincided with the reorientation of industrialization policies initiated in a number of developing countries in the late seventies and eighties. They were reflected in the various efforts aimed at attracting foreign equity and technology necessary for development of modern industry branches like electronic and electrical industries, chemical, automotive equipment, heavy machinery, etc. As a result, in the evaluation of the licensing agreements it was essential to conduct international comparisons and identify worldwide trends in the royalty levels for specific industries and technologies. In the simplest form, the new approach required that in the labour-intensive, low-technology industries royalty levels had to be set much below the 5% ceiling, allowing at the same time rates exceeding 5% in case of high-tech industries.

Further diversification of regulatory practices became necessary in the eighties, especially in the most advanced LDCs which embarked on developing and/or assimilating from abroad the so-called new technologies. In this case, it was not only the question of modern industries, but rather of specific sophisticated technologies, for which a set of favourable conditions and incentives was offered to attract them, including the acceptance of very high royalty rates.

2.4. Level of technical fees

Except for royalties, technical fees represent the most typical form of technology payments. This is due to the fact that standard technology transfer agreement, covering both the right to use and the know-how itself, additional services are being often required to effectively transfer the given technology. As a result, the overwhelming majority of such contracts might be classified as "licensing and technical assistance agreements". On the other hand, if no proprietary technology is involved, the pure technical service agreements are being predominantly used.

Despite the variety of pricing methods, being used for calculating the value of payment for technical services, the personnel fees applied on a time basis constitute its basic component. Herewith, two basic approaches adopted by the registries might be distinguished. The first method was principally based on international comparisons as a result of which reference fee levels were defined for internal use or they were published in the form of guidelines by the given regulatory body. The second method relied on detailed evaluation of the cost structure of technical fees, thus requiring the submission of detailed cost breakdowns by the suppliers of services. The advantage of the first method lies basically in its simplicity. The experience has shown, however, that the second approach might lead to a substantial decrease of fees by eliminating excessive profits "hidden" in the inflated cost elements. Obviously, this requires a comprehensive and lengthy evaluation process and therefore it has been used rather rarely. Sometimes a thorough analysis was replaced by a simple rule of thumb. For example, since it was relatively easy to establish direct payroll cost of expatriate personnel, the "adequate" personnel fee (including overhead and net profit) was defined as that not exceeding 250% of direct cost.

2.5. Payment for technology between equity-related parties

As it has been emphasized earlier, the equity-linked technology transfer transactions have always been under close surveillance by the regulatory bodies in developing countries due to the overwhelming use of transfer payments for draining profits from the host countries. The most rigid attitudes were adopted by the Andean Pact countries in the famous Decision 24, which prohibited payments of licensing fees in contracts concluded between parent and subsidiary companies, controlled in over 50%. The major argument used in this context was that the supplier is being remunerated in the form of additional profits being the result of the effective use of technology. Such rigid approach is recently modified by Decision 220 of the Andean Pact which left the issue of equity-linked technology transactions to national regulations of individual countries.

Despite obvious advantages of prohibiting technology payments between equity-linked parties, the recent liberalization of regional regulations adopted by the Andean Group should be viewed as a reflection of major obstacles as well as evident shortcomings, resulting from the rigid implementation of such regulatory practices. This contradicted, for example, with the functional principles of major technology suppliers from industrialized countries. Large transnational corporations viewed licensing fees as a form of regaining substantial R+D expenditures. The straightforward prohibition of such payments often conflicted with the growing interest of the host developing countries in attracting sophisticated technologies.

The modified approach of technology transfer registries with respect to payments between equity-linked parties relies basically on two principles. Firstly, such payments are generally allowed. Secondly, in this case the evaluation is much more comprehensive, as compared with the

arm's-length transactions. Registries, as a rule, make additional effort to ensure that relevant payments reflect the real contribution of the supplier and that they match the worldwide trends.

3. Restrictive practices

3.1. Evolution of regulatory approaches: An overview

In general terms, restrictive clauses might be defined as legal provisions which directly or indirectly limit the use of acquired technology in a broad sense, i.e., in production, marketing, R+D, etc., thus enabling effective control of production and marketing by the supplier. The relatively high share of such provisions in the licensing agreements, as compared with other business transactions, results from the fact that unlike goods - which are being sold - technology is being "rented" and the licensor retains the respective property rights of the know-how. As a result, there is a clear conflict of interests between the supplier and the recipient as the latter attempts to have unrestricted use of the acquired technology.

The experience of many developing countries demonstrated that inclusion of restrictive provisions in the licensing contracts became a standard and widespread practice of technology suppliers. Moreover, it was also revealed that such clauses are not only reflecting a weak bargaining power of the local recipients but also their indifference as to the incidence of the relevant clauses. Local buyers usually concentrated their attention on immediate effects of assimilating imported technology while neglecting mid-term or long-term implications of clauses which, e.g., tied imports from specific sources or banned exports. Under such circumstances, in a number of developing countries, especially in Latin America, it was considered necessary to impose rigid regulatory rules. This was done by providing in

the respective laws and regulations a detailed list of restrictive clauses which were outrightly prohibited.

Without going into details it might be stated that in many host countries impressive effects have been achieved with respect to the elimination of restrictive business provisions. At the same time, however, the experience accumulated so far called for more flexible attitudes of technology transfer registries in this respect. The main arguments in favour of such flexibility were the following:

- under certain circumstances the clauses deemed "restrictive" might be beneficial for the local recipient and the host country in general;
- the prohibition of specific clauses often conflicted with the well-founded interest of the supplier without bringing essential benefits for the supplier;
- the formal restrictive clauses could be easily substituted by the suppliers by alternative arrangements bringing similar results. As a result, the effects of the registry intervention were practically meaningless.

The flexible framework in dealing with restrictive clauses has been facilitated by diversified regulatory arrangements including the following:

- in addition to the detailed list of unacceptable provisions, there was a general clause granting discretion to the registry to approve the agreements with restrictive clauses when it would be in the national interest to do so;
- supplementing existing laws with detailed internal guidelines specifying situations and conditions under which certain restrictive clauses could be accepted;
- listing the most important clauses within a broader policy framework under which any provisions which unfairly restrict the local licensee should be discouraged.

3.2. Regulatory practices relating to selected restrictive provisions

The problems and dilemmas being faced by the regulatory bodies from the host developing countries as well as alternative solutions will be briefly demonstrated below in connection with the major restrictive clauses found in the licensing contracts.

a) tying clauses

Clauses imposing obligatory acquisition of raw materials, intermediate products, machinery, etc., are generally disallowed as they perpetuate import dependency and enable charging excessive prices. However, in some industries (e.g., pharmaceuticals), the regular and continuous access to the intermediate goods is one of the objectives of the recipient, inter alia, in order to maintain high quality standards. Thus, rather than eliminating such provision, registries often insist on explicit statement in the contract that raw materials and intermediate products have to be supplied at international prices or at the lowest price already being applied to other licensees.

b) export restrictions

As a rule, restrictions on exports imposed by technology suppliers are rarely contested by the recipients in developing countries due to predominant orientation towards satisfying local markets. Registries attempting to eliminate respective clauses are usually making exceptions for those markets where exclusive licences to use a given technology were granted in the past. More flexible approach is based on a realistic analysis of export opportunities in specific markets and obtaining export rights for those

markets. It is being reflected, e.g., in the regional policies of Andean Pact countries which disallow export restrictions within this region. An alternative solution relies on tying exports to the future consultation with technology suppliers.

c) restrictions as to the use of technology by the recipient

Generally speaking, provisions limiting the rights to use technology by the recipient (e.g., those limiting the volume of production, pricing, R+D) have detrimental effect on the process of assimilation and are most often discouraged. In the case of some provisions, however, the overall picture becomes somewhat complicated. Let's take those contractual clauses which impose detailed controls of the production process. It is true that the alterations of the original process and product design are indispensable for their adaptation to the local conditions. Quite often, however, they result in deteriorated quality of products manufactured under licence. Under such circumstances, adherence to the rigid quality standards might play a positive role especially for expanding exports of manufactured goods. Such dilemmas have been usually resolved within the scope of discretion, granted to the regulatory agency.

d) post-expiry restrictions

The narrow interpretation of the licence contract (limited to the property rights component) constitutes a legal basis for restricting the use of technology and/or keeping it secret after expiration of the agreement. Although such clauses are not generally accepted by the registries, exceptions are allowed if the agreement terminates as a result of the licensee's fault or if the restrictions are connected with industrial property rights valid after expiration of the agreement. Secrecy

requirements not going beyond 5 years after termination of the agreement are deemed justified as well.

e) grant-back provisions

The respective clauses in licensing agreements impose on the licensee the free transmission to the licensor of any improvements, inventions, experience, etc., relating to the acquired technology. The registries, as a rule, strongly discouraged such provisions. Somewhat more flexible attitudes were justified by the fact that the potential negative effects of such clauses in the case of host developing countries were quite negligible due to very limited scope of R+D conducted locally. The overall picture has changed in the recent years in line with growing technological sophistication of manufacturing industries, at least in some countries of this region. Nowadays, registries either insist on deleting the said clauses or eventually amend it as to ensure reciprocal transmission of improvements.

f) non-competition clauses (tie-out)

In the case of tie-out provisions, the freedom of the recipient of technology is restricted regarding the manufacture and/or selling of competing products and the acquisition of competing technologies. Usually, national legislation prohibits such clauses, except for specific circumstances, e.g., when the restriction is made in order to protect the confidentiality of know-how or where the exclusive licence has been granted. However, as the experience shows, while accepting such clauses registries insist on precise formulation, because the term "competing product or technology" can be easily extended to products loosely related to the original technology.

g) duration of an agreement

Contract duration is linked, on the one hand, with the question of adequate absorption and, on the other, with the length of time of royalty payments. Initially, the major concern of the registries was to limit unduly extended payments, viewed as unjustified drainage of scarce foreign reserves. In the first place, an attempt was made to define the "reasonable" contract duration, while taking as a basis the period of time required for effective assimilation of the technology. The 5-year term has been most often used and with respect to its worldwide proliferation it might be compared with the 5% standard for royalty payments. On the other hand, registries attempted to eliminate "hidden" extensions being implemented under automatic extension formula. As a rule, automatic clauses were not allowed except for royalty-free agreements. Moreover, since licensors often attempted to extend duration of contracts by including slight amendments and modifications to existing agreements, the rules adopted for extensions were usually much stricter than those governing registration procedures for new ones.

IV. TENTATIVE ASSESSMENT OF PAST EXPERIENCES AND FUTURE PROSPECTS OF TECHNOLOGY TRANSFER REGULATION

The necessity and directions of reshaping the regulatory framework for technology transfer regulation in developing countries have become a major topic in international debates in the eighties. Obviously, one should not neglect the role of changing international environment and specifically the radical technological transformation and globalization of economic activities. The overall situation of the Third World countries as a group has further deteriorated due to unfavourable external factors, such as the growing indebtedness, declining prices of raw

materials and petroleum, growing protectionism in industrialized countries, etc. On the other hand, leading industrialized countries were exerting strong pressures upon the Third World to eliminate barriers and controls of direct foreign investment and technology transfer, while linking such policy adjustments with access to bilateral and multilateral assistance programmes, preferential financial schemes and tariff concessions. Below, we shall concentrate on the domestic factors and draw some lessons from the regulatory experiences accumulated by developing countries over last 20 years.

How the effects of extensive controls of technology inflows, especially those imposed by a number of developing countries in the sixties and seventies, can be assessed vis-a-vis their development objectives? Without going into detailed analysis, we should qualify them as mixed. This results from the fact that visible improvements coincided with operational patterns reinforcing the concept of dependent industrialization. However, some positive changes in the conditions and directions of technology transfer might be regarded as being the result of deliberate policy measures. Many developing countries succeeded in expanding modern manufacturing sector through proper combination of indigenous effort with a well-devised, selective technology acquisition programmes. Wider dissemination of imported technologies have been achieved mostly by insisting on comprehensive training programmes to be included within technology packages. The expansion of manufactured exports, decrease of royalty rates and elimination of restrictive clauses might also be linked with respective regulatory actions.

However, a closer look helps to identify additional factors contributing to the adjustments outlined above. The shift from extractive industries to modern manufacturing sector represents a global trend. Launching comprehensive

training programmes connected with technology acquisition has been quite often initiated by the suppliers, who were generally interested in protecting their worldwide image by maintaining high quality standards. Similar line of thinking might be adopted with respect to another area of visible success, i.e., the expansion of manufactured exports. In this case, deliberate policy measures coincided with the strategy of technology suppliers interested in continuing worldwide sales of the manufactured goods being already in the mature stage of the product life-cycle.

The arguments presented above are not given to undermine the results of developing countries' regulatory measures, but to emphasize that the positive effects were achieved mostly in the areas where the pressure on the part of host governments coincided with objective trends and long-term goals of technology suppliers, being mostly large transnational corporations (TNCs). If this were not the case, the results of regulatory actions would be meager. The payment issue should be mentioned as the primary example in this respect. On the surface, technology suppliers seemed to conform with host countries' requirements and lowered licensing fees. At the same time, however, they introduced sophisticated techniques of "hiding" fees under various cost categories, while bypassing existing barriers in transmitting their funds abroad. Similarly, the restrictive clauses, formally eliminated from the technology agreements, have been substituted by informal ones.

Another historical lesson relates to the existing limitations as to the scope and directions of government involvement in the technology acquisition process. Extensive regulatory procedures necessitated direct insight of the respective government agencies into very detailed aspects of business activities. An attempt to serve as a "third party" actually resulted in mixing regulatory actions with business functions. As it has been discussed in Chapter II, under

such circumstances local buyers felt relieved from direct responsibility and even collaborated with the supplier against the government in the course of negotiations.

The cost involved in implementing extensive regulatory procedures represents another serious limitation of such policies. The experience of many developing countries proved that the cost of equipping, manning and operating respective government agencies can be very high. Herewith, one might speak of the indirect "cost" as well. The necessary screening procedures required certain (sometimes quite long) period of time thus delaying the implementation of technology contracts. The obligatory submission of background documentation constituted a significant burden for technology suppliers and recipients. Although the complaints made by foreign partners on excessive red tape are often intentionally exaggerated, this definitely affects the perception of the investment climate in a given country.

The attitudes and views on the need, scope, directions and effectiveness of regulating technology inflows have been strongly influenced by the experience of some developing countries, which generally followed liberal policies in this respect. Under such policy framework, these countries offered various incentives aimed at attracting foreign technology and direct investment at the same time minimizing the degree of control and corresponding bureaucratic procedures. A notable success of some countries belonging to the said group (especially in South-East Asia) in reaching principal development objectives has definitely strengthened the liberal orientation.

In view of the arguments raised above one might pose a question as to whether and how the regulation of technology transfer should be accomplished under changing economic and policy environment. Although bearing in mind existing heterogeneity of developing countries as a group, it is

practically impossible to offer a generalized assessment, some principal factors are worth mentioning in this respect.

Firstly, the overall conditions and the position of developing countries on international technology market have remained practically unchanged. Consequently, the principal motive for government intervention in this field did not cease to exist. On the other hand, the rapid acceleration of technological progress and enormous potential effects of implementation of the so-called new technologies called for a well-coordinated effort at the national level. The latter argument might be further reinforced by a closer look at the "liberal" technology transfer policies generally pursued in the developed countries and in some developing ones. The most striking evidence is that with respect to frontier technologies, these countries do not leave relevant development and acquisition processes to be guided by market forces alone but attempt to influence them through direct or indirect subtle measures, including various incentives offered on a selective basis.

As a result, it might be argued that in the years to come the regulation of technology acquisition will be indispensable for reaching overall development objectives of the Third World countries. However, one might expect that the emphasis in the relevant policies will be gradually shifted in line with the following guiding principles.

Firstly, unlike in the past, where governments often attempted to maximize their involvement in decision-making process, in the future they will seek the "optimum" in this respect while weighing potential positive effects with direct and indirect costs resulting from undertaking relevant regulatory actions.

Secondly, the emphasis in the regulatory activities will be further shifted towards various advisory and

assistance measures, aimed at strengthening managerial capabilities and negotiating skills of local business community. This should coincide with the general policy of promotion of effective technology acquisition.

Thirdly, one might expect that the negative perception of equity-linked technology transactions will gradually pave the way for an objective assessment of the role of transnational corporations (TNCs) in the technology transfer process.

Fourthly, the experience accumulated so far should result in simplifying regulatory practices, imposed by the recipient countries. This might be reflected, inter alia, in diverting from comprehensive and costly bureaucratic procedures towards more effective but less time- and resource-consuming forms.

To sum up, we shall express the opinion that the "balanced" approach, based on principles outlined above, will play an increasingly important role in shaping the strategies, policies and regulatory practices of developing countries in the field of technology acquisition, towards the end of the twentieth century.