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TRANSFER OF TECHNOLOGY

Policies relating to technology of the countries of the Andean Pact: their foundations

A study by the Junta del Acuerdo de Cartagena*/

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*/ This study by the Junta del Acuerdo de Cartagena has been prepared at the request of the UNCTAD secretariat. The views expressed in the study do not necessarily reflect those of the UNCTAD secretariat.

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INTRODUCTION

1. The policies agreed jointly by the five Andean countries (Bolivia, Chile, Colombia, Ecuador and Peru) on technology at the end of 1970 constitute the first explicit and integrated approach undertaken on the subject by the members of the Andean Pact. Additional complementary decisions are scheduled to be taken before November 1972. Such policies are based on an appreciation of the critical role that technology has to play in economic development and on a recognition of the importance of the technology imported into the Andean countries. Specific emphasis is placed on the need to undertake concentrated action to enhance domestic technological activities. As far as imported technology is concerned, as in the case of foreign direct investment, notice has been taken of the fact that the enlarged market resulting from the Andean integration offers new prospects for economic activities in the area. The awareness of these prospects, stemming from an enlarged and growing market, has changed the relative bargaining power of the parties to the purchase of technology. An attempt has been made to consider explicitly the adequate distribution of benefits accruing to the technology suppliers and purchasers. Furthermore, legal and institutional procedures were instituted to correct the imperfections at present existing in the market for technology within the Andean countries.

2. This document presents the conceptual and empirical foundations of the policies of the Andean countries regarding technology and a brief description of these policies.[1/]

1/ An earlier longer paper upon which the present one is based has been circulated in the Andean countries and was presented to the Organization of American States by the researchers responsible for the project. The Organization of American States financed part of the studies that were carried in the Andean Pact.

Chapter I.

CHARACTERISTICS OF THE MARKET FOR THE COMMERCIALIZATION OF TECHNOLOGY

3. The literature that evaluates issues related to the process of importing know-how into developing countries generally deals with the subject under the heading of "technology transfer". Terminology, although an inadequate index, often throws light on the extent to which concepts have been adequately analyzed and understood. The term "transfer" indicates in this particular case the very limited comprehension that exists about the market of technology. In commercial or economic language one does not talk about the "transfer" of copper, or cotton or television sets, but about the sale (or purchase) of these commodities or products. Similarly, in the case of factors of production a meaningful analysis has been undertaken by distinguishing and evaluating the characteristics of foreign direct investment, portfolio investments, international indebtedness, workers migration, etc. The term "transfer" could represent a rather loose usage of the word; or it could be an indication of insufficient knowledge about the phenomena involved; or even it could fall within what Myrdal called "diplomacy by terminology". In the present paper we thus prefer the term technology commercialization and our purpose will be to evaluate the characteristics of its market. In that sense technology is removed from the Research and Development laboratory and from the sphere of national policies for education, science and technology, and enters the world of commerce. Technology viewed as an economic unit, a merchandise, has a special market (even a market "place") with a particular structure and specific properties, mechanisms that settle prices and "quantities", rules of exchange and market impurities. The general principles of determining economic value on the basis of relative scarcities and the definition of market performance (number and size of buyers and sellers, relative bargaining power, extent of available information, etc.) govern also the market of technology commercialization given its own proper characteristics. In the present document these special characteristics are considered under three broad headings: (a) Properties of technology as a traded entity; (b) Concentration as a market structure; and (c) Some notes on the availability and supply of technology.

A. Properties of Technology and Their Economic Implications

4. These may be conveniently discussed under three headings:

(i) Technology in the process of its commercialization is usually embodied in intermediate products, machinery and equipment, skills, whole systems of production (like turnkey plants), even systems of

distribution or marketing (like cryogenic technology in ships that transport liquid gas), etc. Thus, know-how represents a part integrated in a larger whole. As a result, the market for the former is not independent but constitutes part of the market for the latter. This market integration of various inputs creates non-competitive conditions for each one of them since they are sold in a package form.

(ii) Like in all other markets, a prospective buyer needs information about the properties of the item he intends to purchase so as to be able to make appropriate decisions. Yet, in the case of technology, what is needed is information about information, which could effectively be one and the same thing. Thus, the prospective buyer is confronted with a structural weakness intrinsic in his position as a purchaser, with resulting imperfections in the corresponding market operations.

(iii) The use of information or technology by a company or person does not in itself reduce its availability, present or future. Thus, the incremental cost in the use or sale of an already developed technology is close to zero for someone who already has access to that technology. In cases of minor adaptation (due to scale, taste, local conditions, etc.) the firm incurs certain costs that can be estimated and usually do not exceed a figure in the tens of thousands of dollars. From the point of view of the prospective purchaser, however, the relevant incremental cost for developing the same type of an alternative technology with his own technical capacity might amount to millions of dollars. Given market availabilities, the price between zero or tens of thousands of dollars, on the one hand, and millions of dollars, on the other, is determined solely on the basis of crude bargaining power. The range of the corresponding costs is so wide that no price between them can be claimed to be more or less appropriate.

5. These three properties indicate that technology is traded under conditions that are non-competitive; that prospective buyers suffer from inherent weaknesses in formulating their demand for know-how; and that relative bargaining power is the determining factor that settles the terms of exchange. Policies directed towards the regulation and improvement of the mechanisms for the commercialization of technology need to consider explicitly the implications of such properties on the behaviour of participating firms.

B. Concentration as a market structure

6. In addition to the properties mentioned above, we need to refer to some additional characteristics of the structure of the market within which technology is being traded and the further implications that this has on requisite policies. These characteristics are related to particular forms of market concentration, which in turn result in behaviour characterizing markets of sequential and interdependent monopolies. Using the Chilean case as an example we proceed to analyse three forms of market concentration that throw further light on the description of the phenomena involved (see Table below)[1/]. First, there is a concentration in the total payments involved by sector with respect to the country of destination of such payments. Chilean licensees (national and foreign owned), with 399 contracts analysed, paid for royalties, profit remittances, intermediates, etc., the following percentages of the total outlays by sector to the following countries:

Sector	Countries	Percentages of total payments by the whole sector going to the countries that appear in the previous column
Food and Beverages	Switzerland and USA	96.6%
Tobacco	United Kingdom	100. %
Industrial chemicals	Fed. Rep. of Germany and Switzerland	96.6%
Other chemicals	USA, Fed.Rep.of Germany & Switzerland	92. %
Petroleum & coal products	USA & United Kingdom	100. %
Rubber products	USA	99.9%
Non-metalic minerals	USA	97. %
Metalic products (except equipment)	USA	94. %
Non-electric machinery	USA	98.7%
Electric equipment	Netherlands, USA & Spain	92. %
Transport equipment	France, Switzerland	89. %

1/ The figures presented here were analysed by C.V. Vaitsos in "The Process of Commercialization of Technology in the Andean Pact", mim. Lima, Oct. 1971 from data obtained from ODEPLAN "El Capital Privado Extranjero en Chile en el Período 1964-1968 a Nivel Global y Sectorial", Santiago, Aug. 1970; CORFO, "Comportamiento de las Principales Empresas Industriales Extranjeras Acogidas al D.F.L. 258", Publicación No. 9-A/70 Santiago, Chile; and G. Oxman, "La Balanza de Pagos Tecnológicos en Chile", mim., Sept. 1971.

7. This type of very high country concentration of destination of payments from the various sectors (which in turn is the mirror image of the concentration of origin of resources from technology producing countries) depicts basically two inter-related causal factors. On the one hand it indicates the lack of diversification or lack of attempts to diversify potential sources of supply on the part of the purchaser. Quite often he prefers to receive resources in a package form from the same origin since an alternative strategy of diversification would have implied costs of obtaining information, usage of other scarce resources, etc. A rational decision would have necessitated a comparison between these types of costs and those involved in purchasing inputs in a non-competitive manner from the same origin. The second causal factor involved is the fact that the country concentration, expressed above, often reflects a company concentration. Arrangements of patent cross-licensing among transnational corporations, cartel agreements, tacit segmentation of markets (particularly of developing countries whose size prompts such arrangements) often constitute common behaviour rather than the exception.

8. A second type of concentration reflects the combination of contracts for the transfer of technology, for foreign investments (direct as well as loans) and for the purchase of intermediates and capital goods. These three types of contracts often take the form of a package deal. An analysis of one of them implies immediately the analysis of the others, and more especially the analysis of all of them in the package they constitute. For example, the following table relating to Chile lists by order of importance the countries that have the highest number of technology contracts, the largest volume of foreign direct investments in Chile, the largest credits extended by foreign private firms and the largest receipts from the sale of intermediates and capital goods to their Chilean licensees, by whom royalties and/or dividends are also paid.

Number of licences		Total volume of foreign direct investments between 1964-1968 inclusive		Total volume of foreign private loans between 1964-1968 inclusive		Total receipts from intermediate & capital goods, from royalties & profits in 1969, corresponding to 399 technology contracts	
USA	178	USA	$43,103,000	USA	$120,299,000	USA	$16,849,000
Fed.Rep. of Germany	46	Canada	25,181,000	Fed.Rep. of Germany	28,181,000	Fed.Rep. of Germany	4,238,000
Switzerland	35	Fed.Rep. of Germany	14,517,000	Switzerland	18,250,000	Switzerland	3,949,000
United Kingdom	30	Switzerland	2,941,000	United Kingdom	8,121,000	United Kingdom	3,896,000
France	17	United Kingdom	2,264,000	France	6,051,000	France	2,606,000
Italy	12			Canada	4,789,000	Netherlands	2,575,000
Netherlands	10						

9. The above table indicates an almost complete correspondence in order of importance of the countries appearing in each of the four columns. Since the listing of countries reflects in practice the firms involved, the above table indicates once more the existence of a collective exchange of factors of production and intermediates in a package form. Foreign direct investment implies the concomitant "sale" of technology from parent to subsidiary. Also, the propensity to use technology commercially stimulates foreign direct investment. Furthermore, the sale of technology and capital generate the sale of products embodying the technology or manufactured with the aid of both technology and capital. This concentration of resources in a package form creates special monopolistic conditions owing to the absence of competitive forces for each one of the inputs involved which are exchanged jointly in a collective unit. The third form of concentration refers to the market structure of the recipient countries. In a sample taken of foreign owned subsidiaries in Chile, 50 per cent of them had a monopoly or duopoly position in the host market. Another 36.4 per cent had an oligopolistic position in the market. Only 13.6 per cent of

the foreign subsidiaries in the sample controlled less than 25 per cent of the local market. Similar indices of concentration were noted in Colombia. Thus, foreign suppliers operating within high protective tariff walls[1/] are able to pass on to the final consumer, through market domination, monopoly rents that are related to the other two types of concentration examined above. Thus, the three kinds of concentration are intimately connected. Market concentration and control in the host country, coupled with high tariff protection, make it possible to achieve high effective returns in such markets. These returns, then, are passed on to foreign suppliers of collective units through tied arrangements for the supply of inputs, often resulting in domestic tax avoidance (as distinct from tax evasion). Furthermore, country or firm concentration prevents competition even among alternative packages of inputs. Hence, the market for technology and for foreign direct investments, owing to its compounded imperfections in consequence of various forms of concentration, needs special remedial policies to be applied by the governments of the host countries so as to protect the national interests.

C. Some notes on the availability and supply of technology

10. First we need to distinguish between the concept of availability (or non-availability) of technology and that of the supply of technology. The former has to be qualified by inquiring: available to whom? As in the analysis of availability of credit (as distinct from the cost of credit) answers to the question will depend on the understanding of the concentration and "captive" nature of technology on the one hand and the factors that affect access to it by potential users on the other. As far as concentration is concerned, internationally traded industrial technology is to a large extent localized in corporations which through product and process innovation and imitative or adaptive research are able to make commercial use of the fruits of knowledge. It should be emphasized that a large part of that technology (certainly most of the technology sold to developing countries) implies on the part of the sellers "cutting and taping" together bits of knowledge which, when appropriately

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1/ The infant industry argument and tariff protection for such industries certainly need a re-evaluation if "infancy" is ascribed to companies like General Motors, ICI, Philips Int., Mitsubishi, etc. whose subsidiaries dominate the market of key industrial sectors in developing countries.

combined and promoted, could lead to the successful commercialization of modified or new products and processes. This form of innovative activity, with its own form of scarcity, requires technical and other skills (with respect to search for existing knowledge, systems of information diffusion, evaluation, improvement, etc.) which are quite distinct from the activities of the so-called "centres of excellence" of research oriented towards the frontiers of scientific know-how. A systematic study undertaken in the petrochemicals industry indicated that, during the period when technology was most likely to be sold to developing countries, the original producers of a particular product or process accounted only for 1 per cent of the total know-how licensing. The remaining 99 per cent was divided between "followers" of commercial producers (52 per cent) and engineering firms (47 per cent)[1/] Similarly, know-how in electronics sold by technology-intensive companies like Philips International or General Electric to developing countries generally includes know-how regarding products with a certain age of commercial usage (like transistorized components for television or radio). Such technology is available to or from other firms, which are not necessarily technology intensive, in Belgium, Spain, Japan and other countries. Furthermore, this know-how corresponds to technological activities quite different from those of a later vintage and concerned with different products (such as space satellites) to which R & D budget funds are devoted by Philips or General Electric. Thus, when we talk about the availability of technology which is at present sold to developing countries it is more relevant to talk about the kind of technological activities pursued (which could include "in.erse technology", product testing, imitation, even product servicing) rather than about the size of the R & D budget. The economics of technology at this stage are more related to the broader issues of the economics of information and its use for commercial purposes.

11. As far as the "captive" nature of technology is concerned, this is related to legal monopoly privileges granted through patents by countries and to technical captivity acquired through experience, product testing and improvement, guarded performance in the use of knowledge, etc. Access to knowledge and its use (outside of impediments imposed legally through patents or commercially by other

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1/ See R. Stobaugh "Utilizing Technical Know-how in a Foreign Investment and Licensing Program", Paper delivered to the National Meeting, Chemical Marketing Research Association, Feb. 1970, p.5.

barriers on entry) are related, among others, to the capacity of potential users to search for knowledge and to their ability to translate it into competitive product and process innovations.1/

12. The elements mentioned above with respect to the availability of technology are related to but also need to be distinguished from the supply of technology. By supply we mean the cost structure of technology sold to a given firm. Although potentially much more competitive, the present market for technology related to developing countries approaches the characteristics of bilateral oligopoly, that is those of oligopoly-oligopsony. In such a market, with the special marginal cost considerations that are involved in the development and commercialization of technology, its supply cannot be determined a priori. We can only refer to the supply of technology (as distinct from its availability) with respect to the supply facing a given firm with a particular size and ownership structure which operates under conditions of a given effective market protection related to goods produced as well as imported for further processing, and within a particular tax (and even monetary) system and which has to take into account specific government policies with respect to access and negotiations for technology acquisition. Thus, for the same know-how a Chilean-owned firm deals with a source of supply different from that which a Brazilian-owned firm, or a foreign-owned firm in Chile or Brazil, has to deal with. The issue becomes even more complex if one considers that the supply of more of the same technology is meaningless for a given firm once it has mastered that technology and it is contractually and legally permitted to use it.

13. The following example will help to explain why the cost (or supply) of technology is a priori incapable of being determined. The predominant form by which the price of technology is computed is through a percentage rate on the sale of goods or services incorporating the know-how in question. To start with, such a percentage for a given technology will depend on whether the recipient firm is owned by the licensor or by third parties, and on other factors. If it is owned by the licensor and the

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1/ Research in Indonesia indicated that the technology used by foreign investors in the manufacturing sector of that country could have been obtained without necessarily being attached to foreign investments, if Indonesian firms had searched the world market adequately. In the absence of such initiative by the local firms, technology reached Indonesia through foreign direct investments.

local government does not intervene in the process of negotiation, the percentage of royalty payments will depend on the global financial management of the parent-licensor. For example, if the corporate tax rate in the host country of the subsidiary is higher than that of the home country, the parent company will be induced to increase royalty receipts so as to reduce overall tax payments for the firm. Similarly, the higher the ad valorem tariff rates for intermediate products sold by the parent to a subsidiary, the lower will tend to be the (transfer) pricing of such products, which in turn will prompt higher royalty payments as a mechanism of income transfer. The considerations affecting the supply of the same technology for a firm not owned by the licensor will be quite different. Furthermore, the cost of technology (whether in terms of percentage rates or of absolute amounts) will depand on the number of units sold and the price of the product incorporating the respective know-how. Also, given a royalty rate, the higher the ad valorem tariff rate on the products produced by a given know-how, the higher is the absolute cost of obtaining that technology.

Chapter II

EMPIRICAL RESULTS AND THEIR INTERPRETATION

14. In order to understand the terms of the commercialization of technology, diverse studies were undertaken on the subject in the Andean countries between 1968 and 1971. These studies included an evaluation of contracts for the purchase of know-how, an investigation of the structure and implications of the present patent system and a financial analysis of the price effects of technology embodying imported intermediate products. The results, in summary form, of these studies are presented below:

A. Analysis of contracts for the commercialization of technology

15. In the five Andean countries 451 contracts belonging to various sectors were evaluated. The country breakdown was as follows:

Country	N° of Contracts	N° of sectors of economy
Bolivia	35	4 including "others"
Colombia	140	4
Chile	175	13
Ecuador	12	5
Peru	89	2 including "others"

16. The clauses analysed in these contracts raise important economic and legal issues about the extent to which private contracting (Contratación privada) reaches into areas where private economic benefits derived by some or all of the parties involved are in conflict with the overall economic and social interests of the country where they operate. Some answers to this type of questions have long been provided in the industrialized world through antimonopoly and antitrust legislation as well as through the establishment of public regulatory agencies. Many developing countries have still to demonstrate an awareness of these issues and their implications for their private and public economic interests. Furthermore, the terms and conditions to be discussed below raise questions about the concept of liberty or sovereignty to contract among unequals. In a bargaining structure with very unequal participants, with limited information and imperfect overall market conditions the sovereignty of the "technology consumers" becomes a concept of very limited applicability.

B. Export restrictive clauses

17. One of the most frequent clauses encountered in contracts for the commercialization of technology is one prohibiting export. Such restrictive

practices generally limit the production and sale of goods produced through the use of foreign technology solely to the territory of the receiving country. Some allow exports to specific neighbouring countries only. Of the total of 451 contracts analysed by the secretariat of the Andean Pact, 409 contained information about exports which is summarised in the table below:

Country	Total number of contracts	Total prohibition of exports	Exports permitted only in certain areas	Exports permitted to the rest of the world
Bolivia	35	27	2	6
Colombia	117	90	2	25
Ecuador	12	9	-	3
Peru	83	74	8	1
TOTAL	247	200	12	35

18. In Chile out of 162 contracts about which information was available, 117 prohibited any form of exportation altogether. Of the remaining 45, the majority limited exports to certain countries. The exact number of these partial exports permits could not be estimated from the data provided by Chile. Thus, in the four countries for which precise figures were available about 81 per cent of the contracts prohibited exports altogether and 86 per cent had some restrictive clause on exports. In Chile about 73 per cent of the contracts prohibited exports altogether.

19. An analysis of the above data indicates that no significant differences exist among the stipulations in contracts for the commercialization of technology entered into by firms in the countries considered here. For example, contracts with complete prohibition of exports as a percentage of the total number of contracts about which information was available were as follows:

Bolivia	77%
Colombia	77%
Chile	73%
Ecuador	75%
Peru	89%

20. With the exception of contracts entered into by firms in Peru, where figures were high owing to the large number of contracts relating to the pharmaceutical sector in the sample taken, the rest indicate similar percentages. In terms of

sectorial comparisons the following figures were noted with regard to the various forms of export restrictions:

Textiles	88%
Pharmaceuticals	89%
Chemicals	78%
Food and Beverages	73%
Others	91%

21. Restrictive clauses affecting exports are stipulated on the basis of relative bargaining power, in the light of market conditions relating to alternative sources of supply of technology. Despite the different sizes and relative strengths of firms in the Andean countries, the concessions obtained by these firms in their negotiations with foreign transnational corporations that sell industrial technology do not differ greatly. The bargaining power of a relatively large firm in Medellin, Colombia, in dealing with a transnational corporation does not seem to differ very much from a smaller firm in Cochabamba, Bolivia. There appears to be a "critical" level of bargaining power, and this will depend, in part, on government policies.

22. An analysis according to ownership indicated that 92 per cent of the contracts prohibited the exportation of goods produced with foreign technology in the cases where the technology purchasing firms were locally owned. And this occurred at a time when the Andean nations, with the establishment of their common market, were trying to integrate economies by increasing intra-regional trade. Agreements reached between governments are, in the case of the commercialization of technology, greatly influenced by the terms reached among private firms whose relative bargaining power is totally unequal. Also, efforts by UNCTAD and individual governments to achieve preferential treatment for the exports of manufacturing goods from developing countries have to be considered within a market structure which does not permit such exports through explicit restrictive clauses. Technology, an indispensable input in industrial development, becomes, through its present form of commercialization, a major factor limiting such development.

23. The absence of such export-prohibiting clauses will not, of course, lead necessarily to actual exports. Everything depends on the productive and marketing capacities of the firms, their relative competitive position in external markets, their export horizon, etc. Yet, contractually assumed export possibilities, even if they do not constitute a sufficient condition, nevertheless constitute a necessary condition for such export capabilities. What is more, such clauses can severely inhibit the long process necessary for firms to develop export orientation and capacities.

C. Tie-in clauses relating to intermediate products and price effects

24. A large percentage of the contracts for the commercialization of technology include obligatory terms requiring intermediate and capital goods to be purchased from the same source as that of know-how. For example, more than two-thirds of the contracts about which information was available in Bolivia, Colombia, Ecuador and Peru had such tie-in clauses.

25. Even in the absence of such explicit terms, control through ownership or technological requirements and specifications, stemming from the nature of the know-how sold, could determine quite uniquely the source of intermediate products. Thus, as in the case of tie-in arrangements in loans, benefits for the supplier and costs for the purchaser are not limited only to the payments expressly stipulated such as royalties or interest. They also include implicit charges through the various forms of margins in the concomitant or tied sale of other goods and services. Furthermore, at the aggregate level, flows of technology among countries determine the associated flow of intermediates, equipment and capital.

26. This structure of the market for intermediates and other inputs which are tied to the sources of technology and/or capital, has significant repercussions on the strategy of import substitution pursued by the majority of developing countries. Such a strategy has, in fact, implied an increasing dependence on imports of capital goods and intermediate products. Only a few countries well ahead in their development process, like Argentina, Mexico and Brazil, have achieved in certain sectors significant "backward linkages"[1/] in domestic production. Others, however, find that inputs account for an increasing share in their total import bill as industrialization advances.

27. For example, in Colombia two-thirds of the total import bill in 1968 comprised imports of materials, machinery and equipment for the industrial sector, while the other one-third was accounted for by final products for consumption and intermediate goods for the agricultural sector.[2/] A similar dependence and a similar structure of imports are to be expected for Chile and Peru and other countries at a comparable stage of industrial development.

1/ Stimulus to early stages of production given by the establishment of domestic industry depending upon these early stages for its inputs of raw materials and intermediate products. For instance, creation of plant producing shoes could stimulate domestic processing of hides and skins.

2/ See data from Banco de la República, tabulated by INCOMEX "Clasificación Económica de las Importaciones", 1969.

28. For the whole of Latin America it has been estimated that during the period 1960-65 about $ 1,870 million were spent annually for the importation of machinery and equipment. These imports amounted to 31 per cent of the total import bill of the area. They also constituted about 45 per cent of the total amount spent by Latin America on capital goods during the same period. For individual countries this relationship amounted to 28 per cent for Argentina, 35 per cent for Brazil, 61 per cent for Colombia, and 80 per cent for Chile.[1/]

29. As far as intermediates are concerned, industry samples in Colombia have indicated that imported materials represented in 1968 between 52 and 80 per cent of total materials used by firms in parts of the chemical industry. In the case of rubber products the corresponding ratio was 57.5 per cent and in the pharmaceutical industry 76.7 per cent. It was only in textiles that the ratio of imported intermediates to total materials used fell to 2.5 per cent. Similar figures were reported for Chile. For example, imported intermediate products amounted to more than 80 per cent of total materials used in the pharmaceutical industry and between 35 and 50 per cent of total sales of the Chilean firms involved. This heavy dependence on imports of intermediates and capital goods has important repercussions on the recipient countries if one considers the fact that the bulk of such imports is either exchanged between affiliated firms and/or tied to the purchase of technology. For example, it has been estimated that about one-third of the total imports of machinery and equipment in Latin America are made by foreign-owned subsidiaries. If one defines as "overpricing" the following ratio

$$100 \times \frac{\text{FOB prices on imports in Andean countries - FOB prices in different world markets}}{\text{FOB prices in different world markets}}$$

the results for the countries members of the Andean Pact presented the following indicators:

In the Colombian pharmaceutical industry a sample taken indicated that the weighted average overpricing of products imported by foreign-owned subsidiaries amounted to 155 per cent while that of national firms was 19 per cent. The absolute amount of overpricing in the case of the foreign firms studied was equivalent to six times

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1/ Preliminary estimates by the Economic Commission for Latin America (ECLA) presented by F. Fajnzilber "Elementos para la Formulación de Estrategias de Exportación de Manufacturas", ST/ECLA/Conf. 3/L.21, Santiago, Chile, July 1971, pp. 91-95.

the royalties and twenty-four times the declared profits. For national firms the absolute amount of overpricing did not exceed one fifth of the declared profits. Smaller samples taken in the same industry in Chile indicated an overpricing of imported products in excess of 500 per cent while for the majority of them the range was between 30 and 500 per cent. Similarly, in Peru samples in the same industry presented overpricing that in most cases ranged between 20 and 300 per cent while in the case of some products overpricing exceeded 300 per cent. In all three countries the overpricing noted in the imports of foreign-owned firms was considerably higher than that of nationally-owned ones. Evidently foreign technology and capital suppliers have indicated in these cases a preference for realizing their returns in an implicit form through transfer pricing rather than explicitly through royalty payment and/or profit remittances[1/]

30. Similarly in the electronics industry in Colombia comprehensive samples corresponding to firms that controlled about 90 per cent of the market indicated overpricing which ranged between 6 and 69 per cent. In the Ecuadorian electronics industry, 29 imported products that were evaluated in relation to the Colombian registered prices indicated the following results: sixteen of them were imported at prices comparable to the Colombian ones, seven had an overpricing up to 75 per cent and six of them had rates of overpricing of about 200 per cent. Earlier studies undertaken only in Colombia showed a weighted average of 40 per cent overpricing in the imports by foreign owned subsidiaries in the rubber industry and zero overpricing for nationally owned firms. Also smaller samples in the Colombian chemical industry indicated weighted average overpricing that ranged between 20 and 25 per cent.[2/]

31. In cases of imports of products in developing countries returns to the foreign factor suppliers are realized through the overpricing of such products, as well as by other means in cases of exports of products from a country, similar returns can be realized through the underpricing of the products sold by companies to their foreign affiliates. Preliminary research in Colombia, still in process,

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1/ For a comparative analysis of the pharmaceutical industry in Chile, Peru and Colombia see P. Díaz "Análisis Comparativo de los Contratos de Licencia en el Grupo Andino", mim., Lima, Sept. 1971.

2/ For a complete description of the methodology and results of the studies undertaken in Colombia see C.V. Vaitsos "Transfer of Resources & Preservation of Monopoly Rents", Harvard University, Center of International Affairs, Economic Development Report No. 168, 1970.

indicates significant underpricing of products of the timber, fish processing and precious metals industries which are exported by foreign subsidiaries to their parent corporations. Similarly, foreign businessmen with an interest in entering the fishing industry in Peru have expressed their preference for breaking even in their operations in Peru while making their profits "in the marketing and abroad". Considerable interest has been expressed in the past in the worsening terms of trade of developing countries owing to their specialization in the production and exportation of primary products. It is not improbable that the present process of industrialization, given the existing mechanisms for the supply of technology and foreign capital, could have resulted in a further worsening of the terms of trade of these countries. Such a deterioration might have occurred because the markets within which factors of production (such as technology and capital) are being traded, jointly with intermediate products and capital goods, are even more imperfect than the markets for final industrial products.

32. A significant point needs to be added. The above cited investigations and their results were based on comparisons of "overpricing" (or "underpricing") which in turn imply the comparison of two different prices. Yet, income flows occur on the basis of pricing and not just of "overpricing". The former implies the comparison between price and costs, while the latter implies a comparison of prices. In addition to aspects of relative magnitude, important conceptual and measurement considerations are involved. In the case of standardized products, such as natural or synthetic rubber, certain chemicals, specific synthetic fibers, various electronic components specified by nomenclatures, etc. "overpricing" can be estimated. But, in cases of differentiated goods, estimates are extremely difficult and, in practice, probably meaningless. Furthermore, one can ask what is the relevance of "overpricing" in the case of a monopoly or a cartel market structure where prices or price markups are fixed accordingly. On the other hand, the comparison between prices and costs to determine net generated income begs the question of what are the costs. How should overhead costs be apportioned at the international level?

33. These conceptually perplexing questions indicate the need for further work on the subject which will place the approach to technology purchase and foreign direct investment within a bargaining framework. Diverse and complementary policies, such as price ceilings for standardized products or direct negotiations on the pricing of diversified ones, etc., constitute some of the necessary steps to be taken by recipient countries, in the light of the particular characteristics of the industry concerned. A major indirect mechanism that appears to reduce overpricing

rests on tariff levels on imported intermediate products. Yet, such tariff levels cannot be considered independently of those affecting the final product or of the overall commercial policies which, through the effective protection[1] they create, generate returns and determine the competitiveness of domestic production. What remains evident, though, from our analysis is that the study of the cost of technology (particularly when it is obtained through foreign owned subsidiaries) cannot be limited to explicit payments such as royalties but should also include considerations of the often much more important implicit charges incurred through import or export product pricing.

D. Other types of restrictive clauses

34. To understand the meaning and repercussions of a contract one has to evaluate it in its totality. Often terms that are defined in clause N° x are conditioned or modified by clause N° y. Also, without explicitly stating something so as not to violate local legislation one can achieve certain purposes through indirect, legally accepted means. For example, through certain quality clauses one can indirectly affect volume of production or control sources of intermediates. Or through the control of the volume of production (which is permissible under certain patent legislation) one can control the volume of exports (which is not permitted by the same patent legislations). Restrictive clauses in contracts for the commercialization of technology are of various types. For example, in Bolivia out of 35 contracts analysed (and in addition to the export restrictions and tie-in clauses on intermediates cited above) the following terms were included: 24 contracts tied technical assistance to the use of patents or trade-marks and viceversa; 22 tied additional know-how needed to the present contracts; three fixed prices of final goods; eleven prohibited production or sale of similar products; 19 required secrecy on know-how during the contract and 16 after the end of the contract; five specified that any dispute or arbitration should be settled in the courts of the country of the licensor. Also, 28 out of the 35 cases contractually stipulated quality control by the licensor. Similarly in Chile out of 175 contracts 98 had

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1/ Protection given to net output (i.e. value added) of an industry by the whole structure of tariffs, taxes and subsidies, taking into account the effect of taxes and tariffs on intermediate goods as well as protection given by tariffs on final goods.

clauses for quality control by the licensor, 45 controlled the volume of sales and 27 the volume of production. In Peru, of 89 contracts, 66 provided for the control of the volume of the licensee's sales. Some clauses prohibited the sale of similar or the same products after the end of the contract. Others tied the sale of technology to the appointment of key personnel by the licensor.

35. The list of clauses included in contracts for the commercialization of technology and their impact on business decisions prompt the question as to what crucial policies are left in the control of the ownership or management of the recipient firm. If the volume, markets, prices and quality of what a firm sells; if the sources, prices and quality of its intermediates and capital goods; if the key personnel to be hired the type of technology used, etc. - if all of these are left under the control of the licensor, then the only basic decision left to the licensee is whether or not to enter into an agreement for the purchase of technology. Technology, through the present process of its commercialization, becomes thus a mechanism for controlling the recipient firms. Such control supersedes, complements or replaces that which results from ownership of the firm's capital. Political and economic preoccupations that have been voiced in Latin America concerning the high degree of foreign control of domestic industry can properly be evaluated not only within the foreign direct investment model but also within the mechanism of technology commercialization. It is for this reason that the term "technology transfer" is considered in the present paper as one that inappropriately represents the phenomena involved and their implications.

36. An additional issue needs to be mentioned. The type of clauses found in contracts for the commercialization of technology violate basic anti-monopoly or anti-trust legislations in the home countries of the licensors. Since the extra-territoriality of laws is in general not applicable (at least operationally), it befits the technology receiving countries to legislate and regulate accordingly so as to protect the interests of the purchasing firms. Industrialized countries have in the last half century, or even earlier, defined in one way or another in their legislation the extent to which private contracting and the exercise of business power can operate within a market mechanism.[1/] Developing countries have

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1/ As far as tie-in restrictions are concerned, see Section I of the Sherman Act and Section 3 of the Clayton Act of the United States. On similar and related issues (such as export restrictions) see Article 85 (1) of the Rome Treaty establishing the European Economic Community, Article 37 of the 1945 Price Ordinance of France, the Economic Competition Act of 1958 of Netherlands, the Antimonopoly Law of Japan, etc.

still to show an adequate understanding of the issues involved in their commercial laws, those that regulate industrial property, etc. As will be seen in the next chapter, the mechanism for the commercialization of technology cannot function adequately so as to protect the interests of the comparatively smaller and weaker national firms without the existence of concomitant legislation that defines the extent of acceptance of terms negotiated by large foreign transnational corporations.

E. The role of negotiating government committees

37. On various occasions earlier in this paper it was pointed out that the market for the commercialization of technology is best described within a bargaining framework. Given this premise and the fact that a large part of foreign know-how is introduced through the establishment of foreign-owned subsidiaries, it can be concluded that such firms lack even a minimum negotiating position since their interests are, presumably, identified with those of their parent corporation and not with the host country. For example, it is not uncommon to find cases where a foreign wholly-owned subsidiary has capitalized in its books technology that originated from the parent corporation. As a result it could be (a) paying royalties, (b) reducing its tax payments through depreciation "charges" on intangible assets, (c) benefiting from lower tax coefficients in countries where taxable profits are related to "invested" capital, and (d) claiming higher capital repatriations, all for the same know-how. Clearly a foreign-owned subsidiary does not need to capitalize technology since 100 per cent of its capital is already owned by its parent. Thus, unless a government body intervenes between the "private contracting" of a parent and a subsidiary, the distribution of returns from the use of technology is likely to be only one-sided.

38. Similarly, even among independent firms the difference in relative size between transnational corporations and companies in developing countries is such, and the relative cost considerations so different, that the strengthening of the bargaining power of the purchaser can only be achieved through government action. Such action is based on the power a government enjoys in permitting or rejecting access to the domestic market. This type of power is seldom wielded by private firms and its exercise can be quite effective in the confrontation of different types of power at the disposal of transnational corporations. From the second half of 1967 to June 1971 the Comité de Regalías of Colombia has evaluated 395 contracts of technology commercialization. Of these, 334 were negotiated, modified and finally approved and 61 were rejected. In the process of negotiation, payments of royalties were reduced

by about 40 per cent or about $ 8 million annually. The size of the reduction of annual royalties in Colombia through government negotiation is equivalent to the total annual payments for technology reported for the whole economy of Chile. Also, during the latter part of 1970 and the beginning of 1971 negotiations by the Colombian Comité de Regalías:

(i) Reduced by 90 per cent the tie-in clauses in the purchase of intermediates
(ii) Eliminated 100 per cent of the restrictive export clauses
(iii) Eliminated 80 per cent of the clauses on minimum royalty payments
(iv) Prohibited payments of taxes by the licensee on royalties remitted to the licensor
(v) Established maximum percentage royalty rates by sectors.

39. These significant achievements by the Comité de Regalías have to be qualified in the following way. As far as foreign-owned subsidiaries are concerned, reduction in royalty payments could result either in higher profits which could be remitted after payment of local taxes or they could be passed on to the parent firm through inter-affiliate transfer pricing. Furthermore, the exclusion of clauses from the contract of a subsidiary does not mean that the practices involved will be abolished, since control through ownership could still dictate the same practices. As far as nationally owned firms are concerned, it is known that in some cases after such government intervention "gentlemen's agreements" exist, extra-contractually, between licensors and licensees. Nevertheless, in other cases government intervention has resulted in known benefits for nationally owned firms.

40. Up to the end of 1970, when the Decision N° 24 of the Commission of the Andean Pact was approved, only Colombia and Chile had government negotiating committees for technology, patents and trademarks while Bolivia, Ecuador and Peru lacked such bodies.[1/] The major negotiating deficiencies of the Colombian and Chilean committees were the following: First, such committees lacked an adequate legal backing to deal with restrictive business practices imposed through bargaining by foreign know-how and patent licensors. For example, up to 1969 the Colombian Comité de Regalías was not equipped to control the major restrictive practices in the negotiated contracts.

1/ For the text of the relevant articles of the decision, see the Annex to the present document.

41. Yet, in 1970 through specific government action and reinforced by the provisions on commercial and other practices included in Decision N° 24 at the end of that year, the Comité de Regalías was able to enhance its negotiating scope and power. Similar experience was cited in Chile. The actual names of these committees (Royalty Committee) indicate the initial limitations of their activities. They were designed only to control payments or fees, and only in the light of balance of payments considerations, excluding the broader and often more important effects of other clauses in contracts for the commercialization of technology. Second, as the evaluation of contracts in the rest of the countries of the Andean Pact has also confirmed, payments of royalties in more than 95 per cent of the cases examined are expressed as a percentage of sales and not in terms of profits or value added. As a result, among others, the more inefficient a firm is and the more it passes such inefficiency on to the consumer in the form of higher prices and/or the higher the protective tariff levels are on the goods produced, the higher are the royalties paid for foreign technology. Articles incorporated in Decision N° 24 (as enacted in very recent legislation in Argentina) have attempted to correct this situation. Finally, a major limitation of existing government negotiating committees is that their bargaining power is significantly limited by very inadequate information systems. For example, no prior search is made to look for alternative sources of supply of technology combing international market availabilities. Similarly, minimum conditions exist for the evaluation of the technological and broader economic impact of the imported technology.

F. Some considerations on the structure and effects of patent systems[1/]

42. The economic impact of patents stems from the monopoly privileges granted by the State to owners of innovations that are industrially useful. Such privileges are granted on the basis of the traditional assumption that patents provide a necessary incentive for inventive activity and/or it needs to be compensated. Also, through patent disclosure, or the guarantee of monopoly, etc., it is assumed that

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1/ The basic ideas of this part are described by C.V. Vaitsos in "Patents Revisited: Their Function in Developing Countries" article to appear shortly in the Journal of Development Studies.

sufficient incentives are given for applying innovations in commercially beneficial industrial activities. In addition, in terms of overall effects on the country (leaving distributional effects aside) it is assumed that the monopoly costs to consumers and to other producers are smaller than the benefits that accrue from promoting inventive and investment activities through patents. It is important to clarify that these arguments do not apply to inventions and investments per se, but apply to the role of monopoly privileges in such activities. Monopoly privileges granted by patents are clearly intended to give a price incentive to inventions. Prices reflect the level of relative scarcity. Patents, granting a monopoly of their use (or use under license), create scarcity by limiting the availability of inventions, although an invention is by its nature an "inexhaustible" entity in terms of number or times of use. To a certain extent, prices are attached to use of inventions not because of their scarcity but in order to make them scarce to possible users. A patent diminishes the possible use of an innovation with the object of generating an economic rent.[1/] In order to understand the effect of patents on developing countries we need to stress three aspects.

1. The patents granted in developing countries are almost in their totality of foreign origin.

43. The following table presents comparative data on the number of patents of foreign origin as a percentage of the total patents granted by various countries in the years 1957-1961.

"Large" industrial countries		"Smaller" industrialized countries		Developing countries	
USA	15.72%	Italy	62.85%	India	89.38%
Japan	34.02%	Switzerland	64.08%	Turkey	91.73%
Fed. Rep. of Germany	37.14%	Sweden	69.30%	Egypt	93.01%
United Kingdom	47.00%	Netherlands	69.83%	Trinidad & Tobago	94.18%
France	59.36%	Luxembourg	80.48%	Pakistan	95.75%
		Belgium	85.55%		

Source: The Role of Patents in the Transfer of Technology to Developing Countries, United Nations publication, Sales No. 65.II. B.1. pp. 94-95.

1/ Ibid at 3-4; also E.T. Penrose "The Economics of the International Patent System", The Johns Hopkins Press, 1951, p. 29; also A. Plant "The Economic Theory Concerning Patents for Inventions", Economica, February 1934, p. 31.

44. Furthermore, if the number of patents granted by developing countries is weighted by their economic value (for example, by the volume of sales they represent or their value added) the weighted percentage of patents of national origin will probably be less than 1 per cent. Thus, whenever we talk about patents granted by developing countries and the policies that should regulate them we really refer to patents belonging to foreign companies or foreign nationals.

45. The experience of the large industrialized countries has not indicated, relatively, any major change in the percentage of patents of foreign origin. For example, the following table depicts the patents of foreign origin as a percentage of total patents granted by:

Countries	1940[a/]	1957-61[b/]
U.S.A.	10%	16%
Japan	25%	34%
Fed. Rep. of Germany	25%	37%
United Kingdom	50%	47%
France	50%	59%

Sources: a/ John A. Diegger, "Patent Policy: A Discussion", American Economic Review, Papers and Proceedings, Vol. 38, May 1948 p. 257.

b/ Data from preceding table.

46. On the contrary, the patents granted by developing countries have experienced a progressive denationalization during recent periods. The following table indicates the Chilean experience in the matter.

Percentage of patents granted in Chile according to origin

	National	Foreign
1937	34.5%	65.5%
1947	20.0%	90.0%
1958	11.0%	89.0%
1967	5.5%	94.5%

Source: CORFO "La Propiedad Industrial en Chile y su Impacto en el Desarrollo Industrial", Santiago, September 1970.

2. Patents and concentration of economic power

47. An important change has taken place in the structure of the ownership patents in the industrialized countries as well as in developing ones. The majority of patents are owned not by individual inventors but by large transnational corporations. The latter use patents for their global business policy. This change in the structure of

the ownership of patents has, in turn, resulted in the concentration of patents in the control of a relatively very small number of transnational firms. For example, 50 per cent of all patents which were obtained by companies and whose corresponding research was financed by the Federal Government of the United States between 1946 and 1962 belong to twenty firms.

48. Furthermore, of all patents resulting from research that was financed by private firms as well as by the Federal Government during the same period in the United States, 35.7 per cent belonged to less than 100 firms.[1/] Since the patents granted in developing countries are almost all of foreign origin, they also reflect the same type of concentration. In Colombia less than 10 per cent of all the firms that obtained patents in the pharmaceutical industry controlled in 1970 more than 60 per cent of all the patents in that sector. The same percentage applies to samples of patents in synthetic fibers and chemicals[2/]

49. The consequence of the concentration of patents in the hands of a small number of firms is that patents are to a large extent oriented towards the control of the market so as to maximise the overall interests of a small number of firms, who are owners of industrial property privileges. This market control and monopolistic concentration is reinforced through the system of cross licensing between companies, which in turn reduces a world-wide oligopolistic structure into a, regionally, monopolistic one.

3. Lack of direct exploitation of patents in developing countries.

50. Not only do patents granted by developing countries belong almost entirely to foreign companies but, in addition, they are almost all not exploited in such countries. For example, in Peru of 4872 patents granted between 1960 and 1970 in the electronics, textile, machinery and equipment, chemicals, food processing, pharmaceuticals, fishing, metal processing, transport equipment sectors, and others, only 54 were registered as being exploited, less than 1.1% of the total. Similarly in Colombia out of a total of 3513 patents evaluated (2534 of which belong to the pharmaceutical

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1/ See D.S. Watson and M.A. Holman: "Concentration of Patents from Government Financed Research in Industry", The Review of Economics and Statistics, Volume XLIX, Aug. 1967, p. 1.

2/ Deduced from data collected by Tinoléon López and F. Castaño from the Colombian Industrial Property Office for the studies of technology transfer in the Andean Common Market.

sector and the rest to the textile and chemical ones), only ten were being exploited in that country. The lack of exploitation of patents in developing countries contributes basically to the preservation of secure import markets for transnational corporations, limiting to that extent any possible competition by other companies, foreign or national. The repercussions of this lack of competition could imply significant price increases, with negative income and balance of payments effects on the countries concerned.

51. To a large extent technology is sold to developing countries and foreign investments are made as a defensive strategy to avoid loss of markets for owners the owners of technology and capital. Thus, a company will tend to sell technology to a given country not because of assured monopoly privileges but because if it did not sell someone else would do so, and in this manner he would have replaced the company. Because monopoly privileges, extended through patents, restrict competition and because almost all patents appear not to be exploited in the patent-granting developing countries, patents, in this sense, restrict the flow of technology and limit the attraction for foreign investments. When foreign investments are made, patents become one of the instruments by which national companies are acquired by foreign ones by reason of the monopoly privileges extended through the existing patent system.

52. The mechanisms that have been introduced in the legal systems of the Andean countries (which reflect more or less world-wide practices) so as to correct existing policies in the patent system have proved to be quite inefficient or inoperative. One of the basic reasons for the inefficiency (like that of the process of obligatory licensing) is the long and expensive legal procedure through which the present patent system is administered. Because the corrective measures are not automatic and because legal procedures are long and costly the financially stronger transnational corporations have an advantage over the relatively weaker national firms. These considerations have led to the conclusion that the existing patent system needs a total reappraisal so as to correct the inadequacies which appear to have negative effects particularly on the economies and interests of developing countries.

Chapter III

POLICIES FOR THE COMMERCIALIZATION OF TECHNOLOGY INCLUDED IN DECISION No.24 OF THE COMMISSION OF THE ANDEAN PACT[1/]

53. In December 1970 the Commission of the Andean Pact, having considered the experience of the five countries in the process of purchasing foreign technology, established a series of policies which, through legislation as well as institutional arrangements, will regulate the mechanism of the acquisition of technology. These policies were proposed jointly and conform to the overall philosophy and procedures applicable to foreign direct investments, since a large part of the contractually obtained know-how is acquired through foreign owned companies. The trend of these policies cannot, therefore, be adequately analyzed without an understanding of the policies towards foreign investments in general. For example, the progressive national participation in the ownership of foreign subsidiaries that operate in the Andean market will enable national investors to play an increasing part in the use of foreign technology within the sub-region. Ownership of a firm does not mean a non-functional participation in the assets of a firm but rather implies control of and earning profits from the operations and use of such assets.

54. Similarly, the policies regarding technology and foreign investments set out in the decision of the Commission of the Andean Pact can be understood properly only in the context of the economic objectives of the Andean integration. For example, the scope offered by an enlarged market, supported by special policies, changes the opportunities and hence affects the bargaining power of the Andean countries. This, in turn, results in the re-formulation of policies vis-à-vis the rest of the world. Equally, the explicit use of common planning by the five countries, within the framework of complementary industrial projects, affords the opportunity of collective bargaining with foreign investors and suppliers of technology.

55. An evaluation of these broader economic issues and their underlying political implications necessitates much more space than is afforded in the present paper. We shall, therefore, limit ourselves to a brief description of the scope of policies explicitly directed towards technology, while acknowledging that their understanding calls for a broader comprehension of other interrelated political and economic phenomena. We shall divide our analysis into three parts: (a) institutional structure for the importation of technology; (b) the management of the commercialization of technology; (c) complementary policies and programmes for the future.

1/ For the text of the relevant articles, see the annex to the present document.

A. Institutional structure for the importation of technology

56. Article 6 of decision No.24 refers to the establishment of government agencies which, in each of the countries, will regulate the application of and execute all relevant policies concerning imports of technology together with the policies relating to foreign investments. In this sense, previous policies in Chile and Colombia which, through the respective Committees on Royalties, were primarily concerned with balance-of-payments effects, will be strengthened to include the much broader considerations related to technology commercialization and foreign investments. For Bolivia, Ecuador and Peru, the terms of article 6 imply the establishment of completely new government agencies, which were non-existent hitherto.

57. Under article 18, these government agencies are authorized to evaluate and approve all contracts for the commercialization of technology and those relating to the licensing of the privileges of industrial ownership (patents, trademarks, industrial models and designs, etc.). Thus, article 18 will enable the government to strengthen and complement the bargaining power of the nationally owned firms through the machinery for approving the access of foreign technology to the local market. Equally, the government will represent the overall national interests in cases where technology contracts are negotiated between foreign owned subsidiaries and their parents. In the course of the negotiations, as indicated by article 19, the elements of the imported technology will be itemized (production manuals, factory specifications, product embodied know-how, experts' technical assistance, etc.), in order that the contractual value of each one or groups of them may be evaluated.

B. The management of the commercialization of technology

58. The importation of intermediate products and capital goods for the purpose of the commercialization of technology and foreign direct investments were recognized as key elements within the present industrialization programmes. As provided in paragraph (c) of article 6, the Andean countries will establish an information and control system with the objective of bringing the prices of such imports within acceptable ranges, close to the international market prices. In the course of this process, monopolistic structures, resulting from the joint transfer of products tied to technology and/or capital imports, will be subject to regulation. As far as nationally owned firms are concerned these provisions, applied to standardized imported products, will have important effects on bargaining by excluding prices of such imports from the negotiable terms. For highly differentiated products for which quotations are lacking in other markets, progressive national participation in the ownership of foreign companies could, through intra-company bargaining, achieve similar results.

59. Importation of know-how, according to article 21, is compensated by the payment of royalties by nationally owned firms to their foreign licensors and by an increase in the profitability of foreign owned subsidiaries in the Andean countries. The capitalization of imported know-how is not permitted. In this way decision No.24 attempts to restrict the denationalization of the ownership structure of national firms. In previous years such denationalization was achieved not by direct contributions to the investment and/or foreign exchange availabilities of the host countries (since no capital was exchanged) but by the capitalization of know-how[1/] which was already remunerated by royalty payments. As far as foreign owned subsidiaries are concerned, know-how capitalization was leading to domestic tax reductions through depreciation "charges" on intangibles as well as capital repatriation claims. In such cases, therefore, the capitalization of technology constituted a depletion of the capital of the host country through the repatriation of non-existing "investments", rather than a contribution to capital formation.

60. Under article 21 the payment of royalties by a subsidiary to its parent or other affiliates will not be permitted. Such a policy, which is also applied in various other countries, is based on the principle that the effect of technological inputs in a foreign-owned subsidiary should be reflected in its declared profitability rather than transferred to another country's tax jurisdiction. Royalty payments among affiliated firms achieve tax reductions in the royalty paying country and could also reduce the tax liability of the entire transnational corporation concerned. Tax avoidance and the economic and political behaviour reflected in the under-declaration of true profitability run counter to the national interest of the host countries.

61. In order to increase the information available about the commercialization of technology and so to strengthen the bargaining power of the recipient countries as well as improve the conditions of itsuse, article 48 establishes a permanent system for the exchange of information among the five Andean countries about the terms and impact of the purchase of technology. This constitutes the first step towards the application of the principle of the "most favoured nation" in the purchase of technology. It is directed to overcome monopoly rents that accrue from market segmentation under conditions of different elasticities of demand for technology, unequal availability of knowledge and various degrees of bargaining power by the firms acquiring technology.

1/ Acquisition of equity participation in place of other means of remuneration for the transfer of technology.

62. Articles 20 and 25 establish for the first time in the countries of the Andean Pact a legal base for dealing with restrictive businesspractices that result from the purchase of technology and from the licensing of patents and trademarks. Export restrictions, tie-in arrangements, control of the size and structure of production, the hiring of personnel, the use of alternative technologies, etc. are regulated by these articles. Owing to the absence of comprehensive anti-monopoly legislation, which is attributable partly to the lack of adequate analysis of the effects of monopoly and economic concentration in developing countries (the size of whose markets often conduces to monopoly), specific legislation is needed to curb restrictive business practices in the sale of technology.

63. Pursuant to articles 26 and 54, by the end of 1971 new legislation is to be enacted to regulate matters relating to industrial property. The inadequacy of the existing patent system and the international agreements that regulate it (whose fundamentals were introduced in the last century under completely different circumstances and needs) demonstrate the need for a new approach to these matters. The interests of developing countries should be protected at least in their own legislation.

64. Article 51 establishes the important principle that any controversy or dispute connected with the purchase of technology or foreign direct investments should be dealt with under the jurisdiction and within the competence of the host country. (The importance of this provision becomes clear if one compares it with counterproposals offered by international organizations.) In addition, article 51 deals with subrogation

C. Complementary policies and programmes for the future

65. Articles 22, 23 and 55 provide that by November 1972 a comprehensive legislative and institutional programme relating to technological policies is to be established by the Andean countries. The objective of such a programme is to relate policies regarding the importation of technology to the development and encouragement of domestic technological activities. This will imply the setting of priorities as well as the definition of types and projects related to diverse technological activities. Furthermore, such activities will be coupled with fiscal, monetary and direct incentives so as to encourage and aid them. Various institutional measures will be required, including a systematic and continuous search in the international market for alternative technologies, the establishment of information systems, the aid to domestic efforts for technological development and the creation of appropriate machinery to direct and promote related activities. A central consideration will be the effect of the development and use of technology on employment and on the exploitation of natural resources in the Andean countries.

ANNEX

ARTICLES RELATING TO THE COMMERCIALIZATION AND PRODUCTION OF TECHNOLOGY IN DECISION NO. 24 OF THE COMMISSION OF THE CARTAGENA AGREEMENT 1/

(Extracts)

Article 6. Control over the fulfilment of the obligations entered into by foreign investors shall be exercised by the body which registers the investment, in co-ordination with the competent State departments or agencies in each case.

In addition to the functions referred to in other provisions of this régime and to those laid down in the corresponding regulations, the competent national body shall:

(c) Establish an information and control system with respect to the prices of intermediate products furnished by the suppliers of technology or foreign capital;

(f) Authorize licensing agreements for the use of imported technology and the exploitation of trademarks and patents.

Article 18. All agreements relating to the import of technology and to trademarks and patents shall be examined and submitted for the approval of the competent body of the member country concerned, which shall evaluate the effective contribution of the imported technology on the basis of an estimate of the benefits likely to be obtained there from the price of goods incorporating the technology, or other specific methods of quantifying the impact of the imported technology.

Article 19. Agreements relating to the import of technology shall, as a minimum, include clauses on the following matters:

(a) Definition of the forms in which the imported technology is to be transferred;

(b) The contractual value of each of the elements involved in the transfer of technology, expressed in terms similar to those used for the registration of direct foreign investment; and

(c) Specification of the period of validity.

1/ The translation is unofficial; for original text, see the Spanish version of this document.

Article 20. Member Countries may not authorize the conclusion of agreements relating to the transfer of foreign technology or to patents if the agreements contain:

(a) Clauses whereby the provision of technology carries with it the obligation, for the recipient country or enterprise, to purchase capital goods, intermediate products, raw materials or other forms of technology from a particular source, or to make permanent use of staff designated by the enterprise supplying the technology. In exceptional cases, the recipient country may accept clauses of this kind relating to the purchase of capital goods, intermediate products or raw materials, provided that the price of the articles is consonant with current price levels in the world market;

(b) Clauses whereby the enterprise selling the technology reserves the right to fix the selling or resale price of the products manufactured on the basis of the technology in question;

(c) Clauses containing restrictions on the volume and structure of production;

(d) Clauses prohibiting the use of competing technologies;

(e) Clauses establishing a total or partial purchasing option in favour of the supplier of the technology;

(f) Clauses requiring the purchaser of the technology to transfer to the supplier any inventions or improvements obtained through the use of the technology;

(g) Clauses requiring the payment of royalties to patentees in respect of unexploited patents, and

(h) Other clauses of equivalent effect.

Save in exceptional cases duly defined by the competent body in the recipient country, clauses prohibiting or limiting in any way the export of products manufactured on the basis of the technology in question shall not be accepted.

In no case shall clauses of this kind be accepted in respect of subregional trade or the export of similar products to third countries.

Article 21. Subject to authorization by the competent national body, intangible technological contributions shall give entitlement to the payment of royalties, but may not be treated as a capital contribution.

Where such contributions are made to a foreign enterprise through its parent company or through another subsidiary of the same parent company, the payment of royalties shall not be permitted nor may any deduction be made on that account for tax purposes.

Article 22. The national authorities shall undertake a continuous and systematic investigation of the technologies available in the world market for the different branches of industry so that it is possible to select the solutions which are most favourable and appropriate to the economic conditions of the subregion, and shall transmit the results of their work to the Board. This work shall be co-ordinated with the measures adopted under chapter V of this régime with respect to the production of national or subregional technology.

Article 23. At the request of the Board, the Commission shall approve, by 30 November 1972, a programme designed to promote and safeguard the production of subregional technology, and the adaptation and assimilation of existing technologies.

This programme shall, inter alia, provide for:

(a) Special fiscal or other inceptives to stimulate the production of technology and, in particular, of technologies relating to the intensive use of subregional inputs or designed for the efficient utilization of subregional factors of production;

(b) The promotion of exports to third countries of products manufactured on the basis of subregional technology; and

(c) The channelling of domestic savings into the establishment of subregional or national research and development centres.

Article 24. The Governments of member countries shall give preference in their purchase to products incorporating subregional technology in such a manner as the Commission may deem appropriate. At the request of the Board, the Commission may propose to member countries that taxes be levied on products using foreign trademarks involving the payment of royalties where the technology employed in their manufacture is in the public domain or is readily accessible.

Article 25. Licensing agreements for the use of foreign trademarks in the territory of member countries may not contain restrictive clauses of the following kinds:

(a) Clauses prohibiting or limiting the export or sale to specific countries of products manufactured under the trademark in question or of similar products;

(b) Clauses requiring the use of raw materials, intermediate goods and equipment supplied by the owner of the trademark or his affiliates. In exceptional cases, the recipient country may accept clauses of this kind, provided that the price of the articles in question is consonant with current world market prices;

(c) Clauses fixing the selling or resale price of products manufactured under the trademark;

(d) Clauses requiring the payment of royalties to the owner of a trademark in respect of unused trademarks;

(e) Clauses requiring the permanent use of staff provided or designated by the owner of the trademark; and

(f) Other clauses of equivalent effect.

Article 26. At the request of the Board, the Commission may specify the production processes, products or groups of products in respect of patent privileges which may not be granted in any member country. It may also decide on the treatment of existing privileges.

Article 48. Member countries undertake to keep each other and the Board informed concerning the application of this régime in their respective territories and, in particular, concerning the provisions of chapter II. They similarly undertake to establish a permanent system for the exchange of information on permits granted in their territories for foreign investment or the import of technology with a view to facilitating a fuller harmonization of their policies and increasing their bargaining power so as to obtain for a recipient country terms no less favourable than those negotiated in similar cases with any other member country.

They further undertake to co-ordinate closely their activities in international organizations and forums dealing with matters relating to foreign investment or the transfer of technology.

Article 51. No instrument relating to investment or the transfer of technology may include clauses removing possible disputes or controversies from the national jurisdiction and competence of the recipient country or permitting subrogation by Governments of the rights and shares of their national investors.

Differences among member countries in the interpretation or application of this régime shall be settled in accordance with the procedure laid down in chapter II, section D - "Settlement of Disputes", of the Cartagena Agreement.

Article 52. In accordance with the provisions of this régime and of chapter II of the Cartagena Agreement, the respective functions of the Commission and the Board shall be as follows:

The Board

(a) To supervise the application and observance of the régime and of the relevant regulations approved by the Commission;

(b) To centralize the statistical, accounting or other data supplied by member countries concerning foreign investment or the transfer of technology;

(c) To compile and transmit to member countries economic and legal information on foreign investment and the transfer of technology;

(d) To propose to the Commission the measures and regulations required for the best possible application of this régime.

Article 54. The member countries shall set up a subregional Industrial Property Office with the following functions:

(a) To serve as a liaison body between the national industrial property offices;

(b) To compile information on industrial property for circulation to national offices;

(c) To draw up model licensing agreements for the use of trademarks or the exploitation of patents in the subregion;

(d) To advise national offices on all matters concerning the application of the common standards relating to industrial property laid down in the regulations referred to in provisional article G;

(e) To carry out studies and submit recommendations to member countries on patents for inventions.

Article 55. At the request of the Board the Commission shall establish a subregional system for the promotion, development, production and adaptation of technology, which shall also be responsible for centralizing and circulating to member countries the information referred to in article 22 of this régime, together with any information it may obtain directly on the same subjects and on conditions for the commercialization of technology.

Article C. Pending the entry into force of the regulations referred to in provisional article G of this régime, member countries shall abstain from the unilateral conclusion of agreements on industrial property with third countries.

Article D. Within three months of the entry into force of this régime, each member country shall appoint the body or bodies to be responsible for the authorization, registration and supervision of foreign investment and the transfer of technology, and shall inform the other member countries and the Board accordingly.

Article E. All agreements relating to the import of technology and to licences for the use of foreign trademarks and patents concluded prior to the date of the entry into force of this régime shall be registered with the competent national body within six months of that date.

Article F. Within six months of the entry into force of this régime, the Commission, at the request of the Board, shall approve the rules of the Subregional Industrial Property Office.

Article G. Within six months of the entry infor force of this régime, the Commission, at the request of the Board, shall adopt regulations for the application of the standards relating to industrial property, which shall cover, inter alia, the matters listed in annex No. 2.
