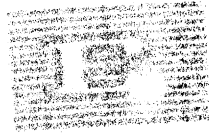


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TRANSFER OF TECHNOLOGY BY TNCs:
TRADITIONAL VERSUS NEW FORMS

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* The opinions expressed in this document are those of the author and do not necessarily reflect the views of the United Nations Economic Commission for Western Asia.

TRANSFER OF TECHNOLOGY BY TNCs : TRADITIONAL VERSUS "NEW" FORMS

by Charles-Albert MICHALET

The technology transfer from industrialized countries to developing countries still remains a central issue despite the extensive literature devoted to this topic during the last decade. It is not surprising at all. Those who consider it a filed away matter are mistaken. Implicitly, they consider technology and its transmission to be no more than, so to speak, a technical question which can be resolved easily by well-established and stable management rules. In contrast to this approach, our opinion is that technology does not exist per se. It does not merely consist of just a good sold and bought on a free market like a newspaper or, even, like a machine-tool. In fact, the matter is much more complex. Technology is a mixture of hard and soft-ware, embodied in equipment or disembodied in licenses or know how. Therefore, ready-made transfer receipts do not exist. Moreover, technology must be considered as a final output of a long and complex process of basic, application and development research. Consequently, it is rather difficult to abstract technology from its conditions of production including the central fact, when transfer to DCs is concerned, that most of the modern technology is still produced in and by industrialized countries to meet their specific needs. It is correct to say that technology is part of the broader topic of North-South relations. Forgetting such a trivial assumption, as is unfortunately often the case, leads one to forget at the same time that technology cannot be considered independently from other economic factors. There are at least, two confusions to be avoided. Firstly, technology is not basic research which by its nature is largely disconnected from its immediate applications. Secondly, and this is certainly most crucial, technology cannot be restricted to a mere set of techniques. If technology must be distinguished from fundamental knowledge, it remains however, a specialized kind of knowledge, a knowledge of techniques precisely. Consequently, assuming that basic knowledge can exist without a corresponding technology, it is also possible to figure out a transfer of techniques without the related technology. Finally, we are simply confronted with the technology mastership issues. As mentioned before, it is also a drastic assumption to abstract

technology from economic its framework. Technology is a central factor as far as production, distribution and consumption of goods and services are concerned. Economic analysis cannot avoid the technology dimension. Therefore it is not surprising for example that the industrialized countries are at present desperately looking at "new technologies" in biology, nuclear energy, data processing, aerospace etc., to try to find a way out of the lasting economic recession. It is not surprising at the same time that DCs need different types of technology according to their industrialization strategies. An appropriate technology to reach international competitiveness on the world market is probably inadequate to meet basic needs. In the end, transfer of technology is an integrated variable of the international division of labor which is taking place.

We would like to keep this general background in mind when concentrating our attention on the role of transnational corporations (TNCs) in the transfer of technology. It is generally accepted that TNCs are major agents in the international channelling of technology. Nevertheless there are at least two main reasons to re-examine that topic. On the other hand, it is rather simplistic to infer from the previous statement, from the view-point of the recipient countries, that it is sufficient to attract TNCs to acquire technology at the same time. In the limited scope of this paper it is not our intention to discuss the validity of that choice from the perspective of the appropriateness for economic development of technology being transferred in this way. We would like to focus back on a more "primitive" issue, i.e. does a real transfer of knowledge occur when TNCs are locating a subsidiary in a given DC? We shall argue that it is largely fallacious on the part of the DC's authorities to believe, explicitly or implicitly, that technology necessarily follows the flow of foreign investments. We will define this issue as the traditional case because it refers to the general management of technology transfer by TNCs. On the other hand, although the traditional case remains predominant, significant changes have occurred over the past few years which could open new opportunities for the recipient countries. New forms of investments are growing in importance. They reflect a major change in TNCs strategies towards their future involvement with the DCs. It is worth investigating whether these new orientations give a chance to the lower developed countries to be in a position to control an effective transfer of technology.

1. THE TRADITIONAL CASE: THE TRANSFER OF TECHNOLOGY THROUGH TNCs

From the point of view of DCs, it is often argued that foreign direct investments are a major channel for the transfer of technology. This assumption frequently appears as a main legitimization for attracting TNCs by giving them special treatment. Our interpretation will be based on two points. Firstly, it is quite certain that parent-companies are transferring knowledge to their subsidiaries located in DCs. Secondly, it is highly controversial to infer from the currently intense circulation of technology that corresponds to a real transfer of knowledge to the host country.

1.1. The Internal Transfer of Technology Within the TNCs System

To put it bluntly, foreign direct investments made by TNCs do not correspond to a country to country transfer of technology. In fact, recipient countries are faced with an internalization process which is not specific to the technology issue; on the contrary, it is a general characteristic of the TNCs operations. It can be summarized in two words : centralization and dependancy.

1.1.1. The Generation of Knowledge Is Centralized At The Level of The Parent Company.

Most of the R & D spending is made for research in laboratories located near the headquarters in the home country. There does not seem to have been a great change since the US Senate Report evaluation other than that 94% of the RD expenditure by US-based TNCs was done in USA. The remainder was spent in few highly industrialized countries: United Kingdom, Germany, France and Canada. The amount of money devoted to R&D in DCs was negligible. Of course, we are speaking of TNCs from a general perspective. Exceptions exist such as in the case of IBM for example. From the view-point of the TNCs' rationality there are too many arguments in favor of centralization to leave any opportunity of a predictable reverse movement. It is worth perhaps recalling them briefly:

- i) the existence of economies of scale and cross-fertilization in RD like in manufacturing activities leads to the establishment of big laboratories with a concentration of highly skilled labor forces;
- ii) the existence of external economies - proximity of universities, research centers, highly sophisticated industries, scientific foundations, scientific oriented administration...
- iii) the existence of a potential demand for new products crucial for the innovation;
- iv) the concentration of R & D capabilities is a precondition to avoid or reduce the risk of a leakage of knowledge. This latter point is important for two main reasons. Firstly, R & D, innovation, technology major factors are in determining the competitiveness of the firms. Secondly, knowledge is also a strategic factor from the point of view of a country's security. The technological gap is part of the international rule of the game;
- v) Finally, the location of facilities correspond to a general trend in segments of TNC's organizational structure. As it has been demonstrated by several studies, the structural inter-relationships between the TNC's headquarters and their subsidiaries follow three stages from a simple informal system at the beginning of the multinationalization process to a global system through the intermediary phase of the International Division. The last stage of global organization means that TNCs are directly elaborating their strategy at a World Wide level. The traditional dichotomy between domestic and foreign activities is erased for an integrated approach. But to increase efficiency and to avoid the well-known consequences of centralization, TNC's are forced to increase the scope of operational responsibility for regional managements and/or for a product division. In doing so, the head-quarter loses some of its usual prerogatives but not all... In fact, it keeps control of three main functions : elaboration of the TNC's global strategy; financial management; and R & D activities.

A recent study by W.A. Fischer and J.N. Behrman devoted to the coordination of foreign activities in a sample of US and European TNC's, confirms the importance of centralization. Furthermore,

they insist on the fact that TNC's "with a more centralized R&D coordination style also tend to have a strong scientific-orientation".

Finally, few arguments remain advocating a dissimination of R & D facilities abroad. Sometimes, it has been mentioned that TNC's could look for a reduction of their R & D costs by delocating part of their research laboratories in DC's where scientists, engineers, researchers exist. Few seem to be ready to follow that direction. The brain drain flow is still oriented upward from DCs to industrialized countries. The counterpart of this basic characteristic of TNCs' R & D management consists in a strong dependancy of subsidiaries vis-à-vis their parent companies specialized divisions.

1.1.2 The TNC's subsidiaries are dependant on the technology provided by the central R & D capacity. At their own level, R & D activities are very limited, if not, nil. To look at that point more accurately, it is necessary to make a distinction corresponding to the main activity of the subsidiaries. Where "relay-affiliates" are concerned, i.e. manufacturing units producing for the local (national or regional market), the product lines duplicate those of the parent company. Therefore the only R & D activities required consist of a very limited adaptation of products to specific local conditions such as climate, transportation, network, specific usages... But whatever the motives of the adaptations, they rarely correspond to a true innovation in the process or product technology. To complete the picture, the frequent existence of a quality test department must be mentioned. Very often, the R & D structures which are identified in field research or in questionnaires are of this latter type. Where "workshop-affiliates" are concerned, i.e. specialized units manufacturing parts or components which are exported to other subsidiaries of the same TNC, the existence of R & D activities is even more unusual. In most cases, a quality control service is largely sufficient.

To summarize, for both relay- or workshop - affiliates, the low level of the R & D activities or its complete absence is mainly due to the basic fact that the subsidiaries are receiving all the technology they need to assume their manufacturing activity from the specialized departments of the parent-company.

It results from our analysis that an intense transfer of technology from the headquarters (sometimes from regional headquarters) to subsidiaries located in DCs or in industrialized countries is observed. The differences according to the host-countries level of development are not ones of nature but only in degree. But that intense transfer has to be closely looked at because it cannot be identified with what the host countries are supposed to be expecting from foreign direct investments.

TNCs with extensive activities abroad have developed a whole range of technological assistance services to their subsidiaries. From feasibility studies to marketing techniques through blue prints, patents, licenses, equipment, engineering, accounting, etc... they are able to provide their subsidiaries with everything they need to operate efficiently. Economies of scale are playing their role here again. TNCs set up plants of a similar type everywhere, following the laws of mass production! Moreover, when the latter are operating, special departments can provide within a very short delay general technological assistance by sending engineers or technicians, parts, components or new machine-tools out by plane. Embodied or disembodied technology and know-how comes from the parent company at a cost for the subsidiary. Generally, the fee is based on a fixed ratio of the sales (3-5%). This internal tax payment gives the subsidiary total access to the technology resources of the TNCs. At the same time, it is worth noting that the latter are supporting part of the global R & D expenditure, including those related to innovations. Therefore subsidiaries located in DCs are participating in the funding of the development of new products which will be launched by priority in the industrialized countries markets. If the picture is completed by the well-known use of royalties and fees to channel out profits exceeding legal repatriation ceilings, it occurs that, finally, technology has several dimensions. The internal technology network and the internal money network are not working totally separately. After all, it is not surprising that some linkages exist within the TNC structure.

The kernel of the technology finance aspect consists of the package concept. Resulting from their powerful capacity, TNCs are able to provide their new foreign units with everything they need to operate efficiently. Each of the items, previously listed, are not charged separately. In fact, the subsidiary

pays a lump sum to get access to the TNC knowledge and know-how. Their extreme dependency vis-à-vis the TNC system gives them, in contrast, a quasi-total autonomy vis-à-vis the host-country. The technology content of the subsidiary's activities is disconnected from the local economy in which they operate. That characteristic is enhanced by the fact that within the TNC global framework, homogeneity of products and processes is the rule. Therefore, there is no constraint for the TNC to adopt its own technology to the host-country's factors endowment. Appropriateness of technology is, by the very nature of the TNCs, out of the scope of their rationality. But, notwithstanding this latter point on which we don't want to insist here, if technology used by TNCs is accepted or even welcomed by the host-country, the question to raise again is the real benefit for these latter. In other terms, having emphasized the internal aspect of the technology flows generated by the TNCs, it is necessary to look at them from the recipient partner's perspective and to evaluate if some external flows exist whether an effective "international" transfer of knowledge is operated through the internationalization of the manufacturing activities.

1.2 The external transfer of technology channels

The crucial point in evaluating the TNC's role in the transfer of technology consists in the possibilities of opening the internal process as it has been previously analyzed. But before attempting to measure the extent to which external channels may exist or can be developed, it is necessary to identify the different levels where TNCs can contribute by enhancing the national scientific and technological potential of the host-countries through their subsidiaries.

1.2.1 The definition of a national scientific and technological potential (NSTP) is a prerequisite for the appreciation of the TNCs external transfer. Briefly, three components may be identified :

- i) A stock of highly qualified manpower : scientists, researchers, engineers, technician;
- ii) A stock of research and training facilities : private or public laboratories, engineering agencies, educational system...

o.

iii) Industrial structures which must be viewed according to their technology content.

These three basic components are managed by two main agents : the host-country's specialized Administration and the local public firms. Obviously, TNC's subsidiaries are included in the latter.

Using this very simplified scheme, it is now possible to identify the potential contribution of the TNCs for the strengthening of the NSTP.

1.2.2. The TNC's contribution to the NSTP, as far as the highly skilled labor force is concerned, is quite valuable. Subsidiaries recruit executives and also middle management (foremen, mechanics...). For these categories, they frequently provide additional training either by sending their employees on courses at local advanced-training centres outside the firm or inside the firm, by arranging special courses with help from specialist instructors belonging to the parent company service, to regional headquarters, or to other subsidiaries operating in the same region and having a large experience.

This effort is particularly important for middle skilled workers whose scarcity in DCs is well known. At the level of the senior management, the TNC's effort depends on the existing proportion of expatriates. The current trend is in favor of a local hiring policy, partly due to legal constraints and cost considerations. In this case, local executives not only receive a complementary training, they also have to acquire the "house-passport"; i.e. a certain pattern of behavior and state of mind. Very often, future executives spend several years in the TNC headquarters.

No doubt, training per se is a transfer of knowledge. But inferring from that statement that there is an external transfer from the TNC to the host-country is another matter. At best, it becomes an effective transfer when the highly trained employees leave the subsidiaries to work for local firms or to manage their own businesses. Therefore, the higher the subsidiary turnover, the higher is the benefit for the local economy. Unfortunately, it seems to be more frequently the case when low skilled workers are concerned. As far as senior managers or engineers are concerned, the spin-off effect is limited.

Sometimes, it is due to contractual provisions prohibiting a high specialist to respond to attractive proposals from a competitor. But the main reason depends on the absorptive capacity of the local economy. In semi-industrialized countries, to work in a TNC department is a prerequisite for ambitious young managers.

Following the limited R & D activities of the subsidiaries, they do not play a substantial role in recruiting and training researchers or innovative engineers. In fact, most of the engineers, technicians and managers are engaged in day to day management, applying standards and instructions from the parent-company. Their scope for innovation is extremely restricted.

In a majority of DCs, it seems that the relationships with University and local Research Centers are very loose. The reasons for the weakness of the linkages are obvious. Firstly, the subsidiaries do not research by themselves. Secondly, the local scientific or technology resources are generally speaking inferior to those available to the subsidiaries through the TNC system. Obviously it is rarely a TNC policy to provide the local research centres with their own up-to-date knowledge. They are not philanthropic organisations and, primarily, they have a constant fear of leakages.

The external transfer of technology through linkages with the host-country's industrial structure is a very large topic. We will be forced to be very schematic. Firstly, it is useful to distinguish between relationships with local suppliers and local customers. Secondly, in both cases, we assume that the workshop-affiliates are not worth considering and we shall concentrate on relay-affiliates only. In this case, it is possible to observe some external transfer when the subsidiaries are using local suppliers for parts and components. Subcontracting is a channel for the transfer of technology because the local firms must follow very constraining technical specifications relative to the quality of the products delivered to the TNCs. Moreover, they have to be competitive in matter of prices and delay with TNCs-home base competitors. Therefore, their effort is not limited to the manufacturing process, but is extended to the general efficiency of their management. To help their subcontractors in reaching these objectives, TNCs may provide them not only with licenses and patents, but also with direct forms of know-how.

In some cases, a TNC's engineer may spend some time with the local subcontractor to supervise and control the way in which they apply the TNCs blueprints and technical standards. It is certain that by following these practices, TNCs are improving the local firms ability. The counterpart is found in the close dependency of the subcontractor vis-à-vis its principal. At the extreme, the former becomes so highly integrated in the TNC system that the external transfer mechanism becomes questionable. But there are also cases in which the subcontractor can escape from a total dependency and use its improved competence for its own sake. A point which is often forgotten, although it is of importance in the lowest developing countries, consists in the assistance provided by the TNCs to the local distribution network. To increase their roles and strengthen customer's loyalty, TNCs are anxious about services provided by their local dealers: repairing, advice, inventories and advertising. Very often, they are offering them special assistance in the marketing field, including financial aid to improve their equipment.

To summarize that brief overview of the TNC contribution to NSTP, it appears that TNCs behavior being given and stable, the external transfer of technology is highly dependant on the level of development of the NSTP. In other words, the TNCs are at least passive if not reluctant in the technology transfer process. Consequently, if they want to get more from them, host-countries must not wait for TNCs to voluntarily improve their NSTP. Once more, TNCs can be almost independent from the resources. Particularly in the case of R & D potentialities, they are not ready to build up from scratch a whole NSTP that they do not need anyway. At best, with some hesitations, they can choose to use the existing local capacities after a careful cost-benefit analysis.

1.2.3. Choice of technology and absorptive capacity.

The internal transfer of technology is predominant when foreign direct investments are concerned. It means that the technology choices made by TNCs are first of all determined by their own activities and finally by their own strategy. This is a rather trivial statement but it has some implications for the kind of technology used and transferred. The basic autonomy of TNCs in the areas of science and technology makes them relatively indifferent to the

local factor endowment. The process technology and the lines of products are designed in the industrialized countries. It is costly for TNCs to adapt them to different host-countries characteristics. To give a well-known illustration in DCs, the TNCs productive techniques are capital intensive, notwithstanding the existence of cheap labor. If TNCs are delocating some segments of their manufacturing activities to benefit from existing low wages - this is particularly relevant in the case of workshop affiliates - they are doing so using the same techniques they would otherwise apply in their own country. For a given technology, they find it more profitable to produce in Taiwan than in Detroit, for example. But in most cases, they are not designing specific plants according to the specific characteristics of the host-economy. Equipment is imported and product specifications are defined on a worldwide basis. In fact, following their logic, TNCs have no other choice than to secure an homogeneous quality for their products wherever they are produced. The reasons are easy to recall: it is extremely unusual for a subsidiary to produce for one national market only. Very often they export to neighbouring countries or to the world market. In the case of assembly plants, there is very little room for adaptation; they are concerned with their brandname reputation and with costs of production levels because they are competing against each other everywhere in the world. The last point must be emphasized. In shaping their geographical network, when a specific country is under consideration, TNCs are often much more concerned with other TNCs' potential or effective competition than by host-government or existing local firms. Finally, the whole TNC role in the transfer of technology plays against appropriate technology to local needs and favors a move towards international homogeneization. To put it abruptly, when demand is concerned, the dream of the TNCs marketing executives is not to adapt their products to the characteristics of the local demand but, on the contrary, to adapt customers tastes to their existing lines of products. At an increasing rate, that dream changes into reality. According to this perspective, the so-called absorptive capacity concept of the host-countries which has been mentioned as an obstacle for a more intense external transfer appears to be ambiguous. In the extreme case, it means that host countries have to be totally similar to the TNCs' home countries. This is the direction that the NICs are trying to follow. We are not making a value judgment but simply finding out that the logic of this development policy may be disconnected from national factors endowment.

Heckscher-Ohlin's views are becoming totally obsolete. But it is true that the emerging world economy does not enter into the traditional international division of labor paradigm. The question is to know whether this basic trend which has been dominant in the sixties and half of the seventies is relevant. TNCs' strategies are perhaps at a turning point. It means that new opportunities could be offered to the DCs in a near future.

2. NEW FORMS OF FOREIGN DIRECT INVESTMENTS AND NEW OPPORTUNITIES FOR THE TRANSFER OF TECHNOLOGY?

The eighties could be marked by a drastic change in TNCs strategy towards DCs, since the mid-seventies some hints suggest such an evolution. One of the most visible illustrations is the growing importance of new forms of direct investments which make foreign ownership a secondary characteristic of TNCs involvement. Our basic assumption is that the technology factor must be placed in a new perspective. Although we are still in a very hypothetical field of investigation, it is worth looking at the plausibility of an increasing degree of freedom for DCs' governments in their bargaining with TNCs to impose contribution to the NSTP. The reasons for this new orientation must be looked at to evaluate the consequences resulting for DCs.

2.1. The decline of foreign direct investment to DCs from industrialized countries is visible from the current statistics sources. For instance, according to OECD-DAC data, in constant (1977) dollars, the average annual growth rate between 1970-1978 was 3.0% from 6.1% for the 1960-1970 decade. However, statistics of these type must be used with care because they refer exclusively to flows. To evaluate the real change in TNCs involvement in DCs it would be necessary to get stock figures including reinvested earnings and local borrowing by TNCs subsidiaries. Nevertheless, other data reinforce the basic assumption of a changing attitude of TNCs. The proportion of foreign direct investments towards DCs is declining when referred to the total flows since the mid seventies (with the interesting exception of Japan and Germany). Most interesting, since the beginning of the seventies and first of all after

1973, a dramatic increase in private international credit operations to DCs can be observed. In 1978, the ratio of the total non concessional financial flows (i.e. commercial bank loans, bond lending, private and public export credits, multilateral loans) to direct foreign investment was 3.9 from 1.9 in 1970. If commercial banks loans alone are considered, the ratio was for the same years 1.9 from 0.8. To put it shortly, it seems that transnational banks are becoming a substitute for TNCs in the channelling of private financial capital to DCs. One of the most spectacular results of this phenomenon is the well-known privatization of the DC's debt. But to go back to our central topic, it is precisely during the same period that many observers have noted an increasing importance of new forms of TNCs involvement in DCs. The basic feature of these new forms is their non-equity or reduced equity participation character. Foreign enterprises seem to favor types of activities in DCs which are not principally based on ownership. The most current new forms of international investments are:

- i) turnkey operations which are basically sales to a country by a foreign firm of plants including equipment and some technological assistance so as to guarantee the operationality of the manufacturing units (products-in-hands contracts) or, in some cases, to guarantee the sales of the plant output (market-in-hands contracts).
- ii) Licensing agreements : the licensee is given the right to use a particular technology against the payment of a fee. The contract may include know-how, trademarks, patents, technological assistance. Franchising is also a type of licensing agreement. In some cases, the licensor may require an equity participation against its intangible asset.
- iii) Management contracts imply that a foreign firm will be in charge of the management of a new enterprise for a limited period. It usually includes the training of local personnel but it excludes the supply of equipment (the difference with turnkey plant operations).

- iv) International subcontracting is also a growing type of cooperation between a principal generally located in an industrialized country and a subcontractor in a DC. However, subcontracting may take place in a given country between a TNC's subsidiary and a local firm. Very often, subcontracting operations are the result of host-countries regulations concerning mandatory local content ratio. In the same manner, subcontracting can be stimulated by a compensation agreement which forces a foreign firm to export part of its output.
- v) Finally, joint-ventures might be mentioned. They imply the sharing of ownership among several partners with different nationalities and different legal status (private/public). The relevant point is that US-based firms are engaging more and more in joint ventures. It must be recalled that, traditionnally, US firms were in favor of majority ownership which guarantees a complete control over their subsidiaries.

2.2. The reasons explaining the growing interest of TNCs for new forms of investment have not been systematically investigated. It is out of our present scope to answer the question. But, nevertheless, some hints can be found which are of interest for their consequences on the transfer of technology issue. A first explanation relies on the increasing number of countries from which TNCs are originating.

As mentioned before, the relative importance of the US based TNCs is declining. It means that foreign investments in DCs come from a large range of countries including European countries, Japan and also developing countries. All these non-US firms are less reluctant than US based TNCs to accept minority equity participation. Secondly, the proportion of small and medium size firms is certainly growing. In fact, this last change is a consequence of the previous factor, particularly where Japanese investments are concerned. Finally, an increasing awareness of host countries, followed by more constraining regulations can also explain the move towards new forms.

From the firm's view point, the evolution of the host-countries is resented as a deterioration of the investment climate. One way to reduce the foreign investment risk is to avoid huge investments in assets which cannot be easily and quickly removed. Equity participation based on intangibles like licences or know-how are especially relevant for the new TNCs' mood vis-à-vis ventures in DCs. They are currently helped in this direction by growing INBS investment in DCs. The new forms of investment are often managed by a consortia of industrial firms bringing their expertise in the field, and foreign banks eventually associated with local banks and international agencies (World Bank affiliates, Exim banks...) taking care of the financial side whether or not local partners from the public or private sector provide a national touch.

The question now is to evaluate whether behind these new concepts there is something changed for the technology transfer.

2.3. Are new opportunities open to DCs for the transfer of technology with the new forms of investment?

It is certainly too early to be able to give a clear assessment of the new orientations followed by foreign firms. Nevertheless, it is worth making a tentative approach of the new mechanisms. The first point to look at is related to the meaning of new forms. After doing that, it will be possible to get a better idea of the new opportunities opened to DCs.

2.3.1. Understanding the real meaning of the new forms is crucial. It commands the whole interpretation of the future foreign firms and host-countries inter-relationships and, particularly, the transfer of technology issue. The basic point is that the new forms imply a shift of ownership from the TNCs to the host-countries. This is apparently the case in all the types of new forms we reviewed before. If this point is accepted, does it mean that a declining ownership of the TNCs corresponds to a similar weakening of their control on their activities overseas? Or, to put it in a different perspective, is the ownership involvement of TNCs followed by an automatic enhancement of the host-country's control? Nothing is less evident. In fact, the ownership-control issue is not at all original in the past history of the industrialized

countries. To attempt to cope with that question, two interpretations may be proposed. They are not exclusive from each other. The first one could be defined as a new version of the managerial economy. It is based on a dichotomy between the role of the board of directors and the role of the managers. The former is rooted in the ownership of the corporate equity. The latter corresponds to the effective management of the corporation. The whole traditional issue is to evaluate the real grasp of the board on the functioning of the firm. If we accept the assumption that the relationship between ownership and effective control is not obvious, it means that a subsidiary with a majority ownership may remain in fact largely controlled by the TNC. Therefore, the "new" situation is not very much different from the "classical" type we analyzed in our first part. The productive unit remains very dependant on the "parent-company" (even if the formula is no longer adequate) for its equipment, know-how, marketing, etc... Very often, it continues to be fully integrated in the worldwide network of the TNC and consequently unable to work autonomously. Finally, nothing has fundamentally changed except the fact that local partners (private entrepreneurs, state enterprises and/or local administration) have acquired a (small) minority interest in a TNC through a possible majority ownership in one among its many affiliates. According to this first interpretation, the "new forms" process is a duplication at the international level of the joint stock exchange century formula. Perhaps without perceiving it clearly, the DCs representatives have become the shareholders of some big industrialized-countries based corporations. It results from the new forms an unexpected and paradoxical consequence: the apparent de-involvement of the TNCs leads to a more in-depth integration of DCs "elites". In the best situation, they are going to be in a better position to share in an increasing proportion of the TNCs profits changing into rentiers. But it does not follow that they will be in a strengthened position to gain more control over the local activities of the TNCs, including getting from them a more intense transfer of technology towards their own economy.

A second interpretation is possible with significantly different consequences when the last point is concerned. Following a risk avoiding strategy, TNCs might be changing themselves into a service industry instead of a productive industry. In that respect, they would be less and less directly involved in manufacturing activities and more and more specialized in engineering techn-

logy, management, marketing and financial assistance. Therefore they could charge their host-countries partners separately for each item. Before, in the traditional framework, as it was described before, they provided the whole range of services in a package form. In the new situation, they will choose to sell those services according to the demand of the local firms. In short, INCs would agree to unbundle their services on a contractual basis with local independent firms (eventually previous subsidiaries whose equity is now majority or fully-owned by locals). This de-connection between the transfer of knowledge and ownership would be an efficient method of spreading risk for firms with extensive activities abroad. It would similarly suit fairly well small and medium firms with limited experience in foreign activities and restricted financial and management resources. For both types of firms, it could be also a very lucrative job. This trend in de-packaging might be very welcome for DCs willing to acquire technology for their own use. Apparently, the major obstacle to the external transfer of technology is to be overcome. Technology, finally, would appear as a genuine good offered and demanded in a free market. The INCs monopoly over it would be vanishing. At least, this is the optimistic point of view of this process. To be more realistic, it is necessary to add two preconditions to make the new forms a real tool for transferring knowledge. The first one is trivial but must not be forgotten. To be effectively externally transferred, technology must be bought by local independent firms. That innocent remark implies the existence of this kind of animal. A condition which is not granted in most of the DCs with, perhaps, the exception of the NICs. Without potential users we are back to the above analysis with local ownership and no control i.e. a disguised type of the traditional INCs' case. The other alternative is no transfer at all for lack of demand. If the first precondition is fulfilled, we are then confronted with a second one which is central and to which we shall devote some concluding remarks. In fact they are related with a whole set of questions which are of main interest for the topic but which are largely out of the scope of our limited framework.

2.3.2. Increasing responsibilities on the part of the DCs governments will be the unescapable consequence of the new forms of the transfer of technology. Within the traditional framework where INCs were not ready to externalize their technological flows, it was quite easy to criticize their practices.

Now, the room for negotiations and initiatives is apparently larger. Therefore, DC responsibilities in using these new opportunities are enhanced. A trap is ready to work if governments are not aware that TNCs are taking a calculated risk in shifting from well established patterns of actions to original types of relationships. Confronted with increasing claims from host-countries, they seem to be in a process of changing their behavior so as to answer the urging demand of their DCs partners but without losing totally (to say the least) the benefit from being a major owner of technical knowledge and knowhow. In brief, if a free market for technology is emerging, the crucial question is whether it will still be totally dominated by the suppliers or be of a more balanced type. If the DCs counterparts of the TNCs remain sleeping partners, the new forms will benefit only the latter. The TNCs' technology receipts will be higher as a consequence of the unbundling procedure which implies that each item is separately charged at a price controlled by the supplier. Moreover risk will be significantly reduced for them.

The DSs' advantage of being, in whatever manner, a share holder will be limited to a small minority group without power inside the TNC's system and without credibility in their own country.

To escape this real danger, DCs are going to be forced to define precisely their demand to foreign suppliers of technology. The only way to meet this requirement is to clearly relate the choice of an industrialization policy and the corresponding technology. Following B. MADEUF's suggestions, it is possible to distinguish between these types of transfer. The first type might be called a competitive transfer. It corresponds to an economic development model which has been applied in the South-East-Asia export-oriented economics. As it is already perceptible in the case of Singapore and Hong-Kong, the required technology transfer must follow the fast pace of international competitive forces. It must give priority to a constant up-grading of the technology content of the local industries. A second type consists in the import substitution model as it has been primarily introduced in some big potential markets in Latin America (Brazil, Mexico, Argentina...). If these countries do not want to be the passive recipient of product cycle dynamics, i.e., being, according to a variable lag, simple duplicators of the developed economic consumer goods,

they have to emphasise technology required to produce capital goods and to favor R & D directed to adapt consumer goods to specific conditions. Finally, a third type of transfer would be directed to raw processing technology for those DS still mainly dependant on their natural resources.

Finally, it must be emphasized again that technology does not exist per se. Its transfer cannot be cut from its final use. Where DCs and TNCs are concerned, it is obvious that, for a long time, the latter were perfectly aware of what they were doing and why. For that reason, they were not too enthusiastic in sharing or adapting their knowledge. The new forms perhaps represent a turning point. It is largely up to the former to take the opportunities which are now offered.

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