

## NEW TENDENCIES IN INTERNATIONAL SPECIALIZATION

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*The structural changes that have occurred over the last decades in the highly developed countries have had direct repercussions on the ways of participating to the global labor division. The principle of labor division will be renewed. It will evolve from a logical foundation based on technical skills and efficiency to one based on competence and knowledge. Thus, there will be a change from a technical or “taylorian” labor division to a cognitive labor division.*

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The development of international trade and the increase in the international financial flow, the growth in the importance of multinational companies and the increase in the international technological transfer, especially in the fields of information and communication technologies, within the frame of a society increasingly based on knowledge, has resulted in an unprecedented intensification of economic interdependence among the countries of the world. This process was caused by a series of tendencies which have manifested themselves in the global economy over the last decades, some of a technological nature, such as the speed and efficiency of transportation and communication, cost reduction, etc., others of an economic nature such as the reduction or elimination of national boundaries standing in the way of international exchange. As a result of the processes of liberalization and deepening of the international labor division, national economies have become increasingly dependent on foreign markets. The technological transfer and the scope of transnational companies have raised new theoretical and practical questions on the optimal capitalization of production factors on a global scale, and on international specialization implicitly.

The very deep changes in global economics have occurred as a result of the process of renewal and modernizing of the economic structures in highly developed countries. The decisive moments in the acceleration of this process were “the Californian revolution of the microprocessor” and genetic engineering. These two represent, in the opinion of M. Richonnier, “the most spectacular component of a new technological revolution, announcing a third industrial revolution by itself”<sup>8</sup>. The new industrial revolution has determined the restructuring of all production and consumption methods and has given birth to “the informational society, in which science, technology, educational and research staff play the key role”<sup>9</sup>.

The structural changes that have taken place in highly developed countries (USA, Japan, Western European countries) in the context of this revolution have had direct repercussions on the ways of participation to global labor division through such effects as: the increasingly extensive implementation of organological specialization models, the

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<sup>8</sup>Richonnier M.; “Des métamorphoses de l’Europe de 1969 à 2000”; Ed. Flammarion; Paris; 1985; pag. 22.

<sup>9</sup> Idem; pag. 15.

renewal and variation of inter and intra-disciplinary specialization topics, the appearance of a new stage in global labor division based on technological specialization, etc.

The first effect derives from the fact that the structuring of production in a vertical way, on stages of the production process and on components of complex products, favors the involvement in the global labor division through specializations of an organological type. These are concerned with the typical components of products which were redesigned according to a modular concept. The standardizing and stylization of composing modules are designed in such a way as to allow the combination of the advantages of their production on a large scale based on automatization and robotization with the benefits of the variation of the range of end products obtained through their assembling.

The renewal and diversifying of international specialization topics is due both to the redesigning of the technologies and production concept of traditional products and to the emergence of new activities and products. While certain industrial products which have become traditional continue to represent the object of international specialization of developed countries, they are obtained in an ever-growing proportion by the use of the new technologies that are specific to the third industrial revolution. The new technologies contribute to the revival of the steel industry, of the chemical industry, of electrical and telecommunications devices, of automobile production, etc.

Nevertheless, within the new structures of international specialization of highly developed countries, the role of propulsion factor of foreign economic exchange, which has been played by the steel, automobile and chemical industries until recently, tends to be taken over by the new activities in the top fields. Out of the new activities, the largest amplitude and implications pertain to information technology, which has become a real industry in the center of which lies the electronic computer, as a "prototype of new products". Information technology, through the introduction of the microprocessor, has given a powerful impulse to telecommunications, air and space industry, electronics and microelectronics industries, to flexible systems production, to biotechnology, to semiconductors and new materials industries. In their turn, aeronautics and space ships industry have stimulated the production of new materials. These are obtained through the combination between some crystals of a certain metal in pure state (boron, etc.) and organic substances (plastic) or inorganic substances (silicone, glass, etc.). They are several times more resistant and lighter than usual metals (iron, aluminium, etc.) and are produced at lower costs. Referring to the importance of new materials, the director of the American design department of Air Force's Space declared that "the only huge progress of the past 300 years is the discovery of new space materials"<sup>10</sup>.

One of the consequences of the new materials and technologies is miniaturization, which is being practiced on an increasingly large scale not only by the USA and Japan, but also by the recently industrialized countries in South-eastern Asia. According to P. Drucker, miniaturization determines a certain "decoupling" of the production of manufactured goods from the production of raw materials. This favors the modern ways of industrial specialization against traditional multifold models such as extraction-processing.

Among other consequences determined by the evolution of the new technologies, several are worth mentioning here: the acceleration of the spread of information technologies, the compression of the economic environment, the technical and geographical restructuring of productive processes, the development of inter-company relations of a partnership type (involving various cooperative agreements and strategic alliances at the international level), the redefining of the ways in which the countries of the world insure their

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<sup>10</sup> Drucker, P.; "The Age of Discontinuity"; Harper and Row Publisher; New York; 1968; pag. 31.

economic growth and development (rather associated with the new technologies than with the natural and energetic resources, production becoming more and more intensive in professional competences, etc.).

These trigger essential changes in the principle of labor division, both at the company level and at the inter-company one. In the course of the expansion of information and knowledge technologies, we witness a de-multiplication of the capacity of transmission and processing of knowledge and information, as well as a process of specialization in these fields. Along the increase of the complexity of economic life, the productive activities are increasingly oriented towards the combination of specialized competencies. The rapid wearing off that competencies are subjected to because of the acceleration of technical changes imposes on companies the elaboration of strategies for creating favorable circumstances for quick assimilation of competencies, through a process of transformation of information into knowledge. As a consequence of these changes at the company level, **the principle of labor division itself will be renewed. It will evolve from a logical foundation based on technical skills and efficiency to one based on competence and knowledge. Thus, there will be a change from a technical or “taylorian” labor division to a cognitive labor division.** The separation of the production activity will be increasingly based on segmentation in blocks of homogeneous scientific knowledge. This knowledge will be subjected to continuous and motivated evolutionary dynamics for the activity of research and transformation of information into new knowledge governed by a restrictive community of specialists.

This new manner of separating economic activity according to the criterion of scientific competencies and knowledge is part of a logic for creating specific resources needed for use in a dynamic perspective, and not so much in the one of simple combination of production factors which is specific to the technical labor division. This change, although very unequal among different countries and economic sectors, will have determining effects on the regional and international localization of economic activity, including the economic relations among companies. Therefore, the determining factors of the international localization of activities envisaged by the cognitive labor division, will evolve from a logic based on comparative costs to a logic of the capacity for creating specific resources, or from a logic of combining generic factors to a logic of creating specific resources on a regional scale (meaning the subdivision of a country) or on an international scale. Any segment of the economic processes in sectors focused intensively on qualified labor and on scientific knowledge will only be located in regions whose benefits are not limited to the availability of generic factors (abundant and often poorly qualified workforce, natural resources), but are able to master the scientific training imposed by the new kind of labor division.

Taking into account the lack of uniformity in spreading these new labor division patterns, there emerges the hypothesis that labor intensive sectors that are organized according to the taylorian labor division principle could now find their place in the process of regional integration, which will also cover countries that are in the course of development, rather than in the process of globalization based on specific research and competencies. In other words, we may witness the coexistence of two types of capital and trade flow, each having its different nature<sup>11</sup>:

-**“globalized” flows** among the highly developed countries of the Triad (USA, The European Union, Japan) and the newly industrialized countries of S-E Asia, which master elements of monopoly over specific competencies; these flows are largely related to the internal exchanges within the Triad;

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<sup>11</sup> Drucker; 1968.; pag. 8.

-**“regionalized” flows** among the countries which belong to the same regional area, with the possibility of extension to less developed countries, but which are endowed with different resources; the integrated areas may represent privileged locations for actions of international states and institutions with the purpose of favoring structural convergence of the member states (industrial and technological policies, financial transfers, investments in sectors that create foreign exchange, etc.), this kind of actions being able to favor the integration of less developed countries.

Over the last decades, international specialization has developed within a context of ever increasing standardization of products, of targeting economies of scale, of configuring a relatively homogeneous demand and in an environment characterized by the capacity of companies to anticipate the quantitative variations of demand. On the other hand, in a more and more insecure environment, companies have had to cope with a dynamic flexibility, imposed by the changes in demand. Because of this fact, some important resources have been directed towards the field of information technology. This determining factor of international specialization is of a different nature than the factors which earlier facilitated economic exchanges among countries. The spread of technologies which involve these flexible processes has had two important effects capable of influencing the dynamics of comparative benefits:

- **a classical effect of technical progress** – in terms of substitution of labor by capital, which entailed a decrease in work intensity of productive processes and, through this, of the relative importance of salary expenses in the manufacturing industry;

- **a specific effect related to the new information technologies** – which made it possible to obtain different products at the same time, or at least to obtain large varieties of the same product, without involving high capital expenses.

This has resulted in a change of the principle of labor division in production units, implying its evolution from a logical foundation based on technical skills and efficiency to one based on competence and scientific knowledge. The increasing role of information and scientific knowledge in the economic activity has determined a growth of the importance of production based on homogeneous competencies and sets of knowledge, which resulted in a functional reconstruction of productive processes. A selection of the relations among companies took place. Vertically structured integration, sub-contractual agreements and market relations are replaced by long term contracts or strategic alliances. These alliances will be organized within a coordinated network. From now on, the criterion of activity location will move from a motivational logic of benefits resulting from comparative costs to a logic of access to specific factors (qualified workforce, positive foreign relations, etc.)

The effects of the technical changes favor the new specialization patterns; the criterion is not anymore simply restricted to cost minimizing. Companies will take into account more and more the access to specific factors which suppose the mastering of the necessary amount of scientific knowledge. This is the reason why countries whose only advantages are the availability of abundant and cheap workforce or of natural resources do not look attractive for the operations of dislocation performed by multinational companies. Dislocations continue to take place, but their determining factors take into account more and more the criteria of positive foreign relations, of quality, of competence and of costs.

Moreover, the innovations of products which are necessary for intermediary consumption (new materials) generally favor exchange among highly developed countries and strengthen the positions of international specializations within the same field at the level of intermediary products. Thus, recent progress in the field of biotechnology already has repercussions over international trade in agricultural raw materials and first-line processed materials, among highly developed and poorly developed countries. New biotechnologies

which appeared in the 70's and were spread in the 80's stand for a generic technology which influences numerous sectors of the economy in general and the agricultural and food industry in particular. The high level of the expenses for research and development and the availability of highly qualified staff transform biotechnology into a field which is reserved for the most advanced highly developed countries. These new products that are already on the market are often substitutes for natural raw materials.

Multinational companies, which represent the key elements of the sector based and geographical orientation of international exchange of merchandise and capital, aim at the exploitation of specific competencies rather than at the simple mix of generic factors.

The spread of the new production management patterns and of the new information technologies, which we have interpreted as a manifestation of the change of the labor division principle towards a logical foundation of competencies and scientific knowledge, is accompanied by phenomena of recovery of comparative advantages which used to be obtained by less developed countries, by the developed countries, in sectors considered traditional from the point of view of the neo-factorial theories of international exchange.

The reduction of the specialization of the developed countries in such sectors should be irreversible and, moreover, it should lead to a wide transfer towards less developed countries, which are able to provide a large amount of work force. However, the recovery of the comparative advantages in these sectors by the developed countries triggers an international reconstitution of productive processes, of international and sectorial specialization types and of the economic activities relocation operations.

Thus, the limitation of certain raw materials or any other production factors becomes relative. These substitution effects will mainly affect the mineral or agricultural raw materials exports from less developed countries towards developed countries; therefore, a long term specialization in scientific competencies can be followed by changes in the products specialization (the erosion of the natural advantages of the less developed countries).

The product life cycle theory (Vernon – 1966, Krugman – 1978, Flam and Helpman – 1987) does not explain this paradox of the return of the advantages, on the same product, to the innovative country. We can exemplify here with the recovery of the comparative advantage of Switzerland, in the field of horology, back in the 90s of the previous century, after intense erosion, a decade before, which occurred as a consequence of the new industrialized countries in South-Eastern Asia. The revival of the so-called traditional or work-intensive industries demonstrate this transformation: a country which possesses specific resources which enable the manufacture of a group of products has a long term advantage. The reversibility of the specialization also occurs at the product level. The countries which possess specific competencies (innovation, human resources, positive foreign relations) can recover the once lost advantages in favor of less developed countries, which limited themselves to imitating these products. Although the above-mentioned theory presupposes a permanent loss of the innovative country's advantage over the imitated and delocalized product, the latest transformations demonstrate that the same country may as well recover the advantage over the product in question. It will introduce two types of innovation which will allow the recovery of advantage over the new types of the original product: procedure innovation and product innovation. The source of these innovations is the absolute advantage the country has in terms of research-development activities and cognitive resources.

This analysis of internationalization on the basis of specific competencies is mostly verified through the polarization-concentration of goods and direct foreign investment exchange between and within the Triad's development poles. The marginalization of the countries endowed with "natural resources" (work force and primary resources) is

expressed by their being increasingly excluded from the international alliances and agreements regarding technology. At the same time, the changes in the orientation and the determiners of direct international investments at the beginning of the 90s of the previous century, confirm the recoil of the logic of the international segmentation of the production processes, based on the exploitation of the advantages related to the comparative costs for the developing countries. As an effect, we witness an intense and rapid growth of direct foreign investments in the last two decades; however, this faces a double reorientation-geographical and sectorial- and a triple change- in terms of nature, determiners, and its forms. **Geographically** speaking, the developed countries are not only the main direct foreign investors, but they are also the main receivers. Countless studies demonstrate that the developed countries have been operating 95% of direct foreign investments since the mid-80s of the previous century, and have been receiving over 80% back. This polarization of direct investments between developed countries is followed by the increase of the direct foreign investments, crossing at the intra-industrial level; as far as **sectors** are concerned, the contribution of direct foreign investments in primary sectors decreases in favor of the manufacturing industry and, more importantly, in favor of services, which represent over 40% of total investments, in contrast with 25% at the beginning of the 70s of the previous century; while the **nature** of direct foreign investments, by the end of the 70%, used to be of the vertical integration type, at present, most of these investments are horizontal; some mutations, in terms of main **determiners** of direct foreign investments, correspond to all these changes, which took place in the complex context of geographical and sectorial orientation. A dramatic decrease of the traditional determiner's role, regarding the factorial endowment, can be noticed. Countless studies emphasize the great importance of technological advantages in the attempt to attract direct foreign investments; as far as the **means or types of direct foreign investments** are concerned, we witness an increase in the direct intermediary forms (join venture agreements, strategic alliances, mergers, acquisitions), at the disadvantage of the creation of majority subsidiaries. Thus, in the context of these fluxes, the acquisitions increased from 67%, at the beginning of the 80s of the previous century, to 80%, at present.

The activity sectors are not so intensely involved in the international segmentation of work based on specific competencies. While the scientific knowledge intensive sectors are much more globalized, the less intensive ones may find their own place, either on a short or on a long term (as long as this inequality will last), in the context of some regionalized fluxes. The developing countries (Mexico in NAFTA) may find a means of international insertion on the basis of comparative advantages. The favorable context created by regional integration may stimulate this process.

While globalization, determined by the activity of great multinational companies, can trigger a process of exclusion of the "naturally endowed" countries from the international fluxes, regionalization creates, at least on a short or medium term, the favorable conditions of a more active participation, on behalf of developing countries, in the global economic context.

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