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THE INFLUENCE OF MULTINATIONAL CORPORATIONS ON  
INDUSTRIAL DEVELOPMENT: A PRELIMINARY ANALYSIS  
OF THE PROBLEM

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## PREFACE

The word "internationalism" is being used more and more often to denote the process of increasing interdependence among societies in general and national economies in particular. It has been pointed out by several researchers that global development in the 1980s will be characterized by the process of internationalization. The impact of this trend on national economies is likely to range from threats through challenges to opportunities. Prerequisite to the assessment of its potential impact is a deeper understanding of the international environment, its main actors, the measures and policies most likely to be adopted, national and international priorities, etc.

There is little doubt that multinational corporations are playing a leading role in the international economic and technological scene and that they are an important topic for research. While a great deal has been written on this topic, a balanced, complex, unbiased view has yet to be published. IIASA has not yet approached this problem; this working paper represents a first attempt to map out the problem. Dr. Oleynik, who participated in the Young Summer Scientists Program 1981 has been successful in compiling a summary of the views and practices of different countries toward multinational corporations. The work is by no means complete: it represents the results of two months work during the summer of 1981 and contains an interesting overview of the process of internationalization including socialist countries.

Because of the relevance of the topic for many of the tasks being pursued at the Institute, we would like to share in this form the results of Igor Oleynik's work with all those interested.

Tibor Vasko  
Acting Leader  
Industrial Development Focal Task

## ABSTRACT

The rapid development of MNC (multinational corporations) during the last ten years has made it important to study some new aspects of their influence on the economic development of different countries. The influence of MNCs has become significant in such areas as development of productive capacities, technology transfer, creation and distribution of new products and technological processes, trade, economic cooperation, and extraction of raw materials. Study of the peculiarities of this influence shows the usefulness of studying the MNCs' role in elaborating national strategies for industrial development. It would also be useful to organize a more comprehensive study of these problems in the future.

## CONTENTS

1.	INTRODUCTION	1
2.	THE INFLUENCE OF MULTINATIONAL CORPORATIONS (MNCs) ON ECONOMIC DEVELOPMENT	3
2.1	The Definition of an MNC and the Aim of the Study	3
2.2	The Development of MNCs and the Directions of Their Influence	4
3.	A QUALITATIVE ANALYSIS OF THE INFLUENCE OF MNCs	14
3.1	The Influence of MNC on the Creation and Assimilation of Innovative Technology	14
3.2	The Involvement of MNC in Economic Cooperation Between East and West	18
4.	CONCLUSIONS	24
5.	REFERENCES	27

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Igor S. Oleynik

1. INTRODUCTION

The current period in the industrial development of the world economic system is characterized by significant changes in the trends and factors that determine development in different groups of countries. These changes are caused primarily by increasing difficulties in the development of the world economy. Shortages of energy and resources, inflation, unemployment, and a slowdown in economic and industrial development in most of the industrialized countries have raised very serious new issues at both national and international levels. For details see Vasko (1981).

The process of economic development of different countries is being accompanied by a further deepening of the international division of labor, a development of international trade, and bilateral and multilateral economic cooperation between countries and groups of countries belonging to differing socioeconomic systems.

One of the factors that began to influence industrial development more strongly in the 1970s was the multinational corporation (MNC). During the last decade the scale of MNC operations increased significantly, not only in developing countries, but in developed countries as well. As a result, the influence of MNC operations and the operations of their affiliates began to play a more important role in the economic development of different countries.

It is now possible to consider the influence of multinational corporations as an important factor in industrial development. MNC now actively take part in world trade and

economic cooperation among developed, developing, and socialist countries. The MNC are playing an important role in the process of technology transfer in the extraction and distribution of raw materials, etc.

In view of the fact that during the last twenty years the development of MNC has become as objective a factor in the economic development of the world economy as in the economies of individual countries, it seems that the analysis of the main peculiarities of their influence will have both scientific and applied interest. So a study of the peculiarities of the influence of MNC is important not only for understanding the future of world economic development, but also for formulating concrete strategies for industrial development in individual countries.

It must be stressed that it is rather difficult to define the main directions and results of MNC influence on industrial development of different countries. One difficulty is that national (except the US) and international statistics contain practically no data about MNC activity and the peculiarities of their development.

But an analysis of the data available makes it evident that during the last ten years the influence of MNCs on world development and on the development of separate countries has increased significantly. It has become clear that these corporations are now an important structural element of industrial development, mostly for the developing and some developed countries. This situation is closely linked with the increasing influence of direct foreign investment in a number of countries and also with the increasing financial, productive, and technological potential of multinational corporations during recent years.

The problem of MNC influence is far-reaching and complicated, which makes it practically impossible to study this problem in a short working paper. So just two important fields of MNC influence were chosen for preliminary analysis.

The first is the influence of MNC on the creation and assimilation of innovative technology. The second is the involvement of MNC in economic cooperation between East and West.

This study also concentrates on multinational enterprises that are engaged primarily in manufacturing. Thus all those MNC that carry out substantial extractive, trade, and banking activities, such as oil firms, international trade firms, banks, and so on, are excluded.

Of course, other problems also originate from the influence of MNC on industrial development. Here we can name: the influence of MNC on the development of various concrete industries, on employment, on the extraction and distribution of

natural resources, on world prices, on international trade, and so on. But of course these problems need special attention and their study must be based on a large number of recent data.

Thus taking into account the limited information available and the size of this working paper, it must be considered merely a first step in studying problems connected with the influence of MNC on the industrial development of different groups of countries. Undoubtedly, an analysis of these problems would be an important task for study in the framework of IIASA's Industrial Development project.

## 2. ECONOMIC DEVELOPMENT AND THE INFLUENCE OF MNC

### 2.1. The Definition of MNC and the Aim of the Study

During the last ten years the role and influence of multinational corporations (MNC) on the world economy and on the economic development of individual countries has increased significantly. This is connected with the fact that the importance of direct foreign investment in many national economies has also increased during the last decades.

Before analyzing the available data characterizing the development of MNC it would be useful to make a general definition of a multinational corporation as a specific economic organization that functions in the complex environment of the world market.

It must be noted that in spite of the large volume of literature devoted to MNC, the term "multinational corporation" has not yet been clearly defined. In practically all cases the authors adapted the definitions of MNC to the aim of their own specific studies, which for the most part were organized on differing methodological bases. In all there are about 50 different definitions of the "multinational" or "transnational" corporation. They include the following components: activities in several countries (38); global perspective (24); industrial activity (19); minimum size (15); minimum percentage of foreign sales (15); quoted on several exchanges (11); regional spread (10); international management (4). (See Lietaer 1979).

So these definitions vary greatly from very broad to very narrow. In spite of this, there are several popular definitions that were accepted as being basic in different well-known studies and that describe rather clearly the nature of MNC. One of them was made by a U.N. special commission and defines a multinational corporation as an "enterprise undertaking or controlling production or service activities in countries other than the one in which its head office is located." (See Transnational Corporations in World Development: A Reexamination 1978).

The other popular definition was formulated by the US

Federal Trade Commission and restricts multinational corporations to those having a total turnover of at least 100 million dollars, having their own subsidiaries in at least six countries, and having invested at least 20 percent of their capital abroad. (See Lall and Streeten 1978).

The second definition is of course more applicable for studying the influence of MNCs on industrial development. Because small companies, even those highly specialized in one kind of production or another, play only a limited role in domestic or foreign markets, and exert practically no influence on the world economy in general and on the economic development of individual countries. So for the purpose of this study, it would be reasonable to concentrate on the group of large MNC that have dominant positions in the world market.

It is also reasonable to limit the scope of this study. In scientific literature the term "multinational corporations" includes business enterprises that operate in manufacturing, banking, services, insurance, etc. In this study it would be reasonable to concentrate attention strictly on manufacturing multinational corporations, because these corporations exert the most influence on the industrial development of different countries.

As a rule multinational corporations include private, state-owned, and mixed enterprises that carry out various economic functions, such as production, marketing, and research, in different countries simultaneously, with resources being allocated without regard to national frontiers. They take an active part in international trade and economic cooperation. Their affiliates (branches, subsidiaries, joint ventures) are joined together by ties of common ownership, are subject to various means of control, and are responsive to an overall common management strategy.

## 2.2. The Development of MNCs and Possible Directions of Their Influence

Insufficient data make it difficult to estimate accurately all the ways in which multinational corporations influence the world economy, and particularly, to gauge those changes that have taken place during the last 10 years. Nevertheless, using the available sources of information, it is possible to evaluate some general directions of this influence.

According to the most recent U.N. study, there are 3,500 parent companies in 14 European countries, the United States, Canada, Japan, Australia, etc., with affiliates in Western and developing countries.\*

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\*U.N. experts use the broad definition of MNC.



About one thousand of these MNCs have affiliates in Western countries only and 446 in both Western and developing countries. The majority of them (1197) are U.S. corporations (Feld 1980). See Table 1.

The economic power of MNC has reached significant proportions. According to U.S. Congress data, the share in world industrial development held by 1200 of the largest MNCs was about 30 percent by the mid-1970s and a mere 650 industrial MNC controlled about 50 percent of all trade among capitalist countries (see U.S. Economic Growth 1977).

According to several estimations the MNC capital amounts to 100-270 billion dollars, that is, approximately 1.5-2 times the general reserves in the hands of governments (see Barnet and Muller 1975).

Even on the basis of these few figures, it is possible to estimate, approximately of course, the growing influence of MNC on the world economy.

According to several forecasts, by the end of the 1980s about 20 percent of the global labor force might be employed by very powerful MNC's that would also control a large part of world production (see Feld 1980). And MNC produce approximately 25 percent of the GNP of the capitalist world (see Feld 1980).

Multinational corporations have even greater influence on the economic development of individual countries, groups of countries, and economic unions.

For example, the volume of sales by American corporations through majority-owned foreign affiliates increased from \$97.8 billion in 1966 to \$514.7 billion in 1976. Direct US investment abroad also increased, from \$7.5 billion in 1970 to \$28.7 billion in 1977 (see Table 2). At the end of the 1970s affiliates of U.S. corporations produced five times more abroad than they exported from the United States (U.N. Yearbook of International Trade Statistics 1979); earnings from this source increased during this period from \$8.2 billion to \$19.9 billion (Feld 1980).

The influence of MNCs on the economic development of West European countries is also very important. For example in the mid-1970s, industrial multinationals employed between 10 and 50% of the whole labor force in various European countries. They accounted for between 8 and 35% of all wages and salaries and they invested between 10 and 40% of their capital in the economies of their host countries. (See Table 3). Direct foreign investment and the activities of MNCs are of increasing significance but not yet equal importance for the industrial development of West European countries. According to existing data this influence is most significant for West Germany, Austria, France, the United Kingdom, and Sweden (see Tables

Table 1. Firms with one or more foreign affiliates, by developing host region, 1977.

Number of firms with foreign affiliates in developing countries

Firms based in:	Total	Western Hemisphere only	Asia only	Africa only	More than one of the three regions	In each of the three regions
United States	1,197	522	130	53	492	166
United Kingdom	639	97	176	102	264	136
FRG	316	134	57	29	96	20
Switzerland	109	48	11	6	44	12
Netherlands	104	28	18	10	48	21
France	246	36	19	125	66	27
Canada	121	77	12	9	23	11
Japan	225	46	77	5	97	20
Belgium	90	16	2	49	23	8
Australia	181	11	150	1	19	2
Italy	58	23	7	9	19	7
Sweden	63	27	5	3	28	10
New Zealand	58	2	55	-	1	-
Denmark	22	7	4	4	7	2
Norway	15	4	5	-	6	3
Spain	34	22	3	4	5	-
Austria	11	3	5	1	2	1
Finland	7	4	-	2	1	-
Portugal	6	2	1	3	-	-
Total	3,502	1,109	737	415	1,241	446

SOURCE: Adapted from Table 4 in U.N. ECOSOC Document E/C, 10/58. March 23, 1979.

Table 2. U.S. direct investment abroad--direct investment position and income, by country, 1970 to 1977, and by selected industries, 1977.

In millions of dollars. For definition of "direct," see headnote, table 1503. Minus sign (-) denotes decrease. See also *Historical Statistics, Colonial Times to 1870*, series U 41-46)

COUNTRY	DIRECT INVESTMENT POSITION (at yearend)									INCOME <sup>1</sup>								
	1970	1973	1974	1975	1976	1977, prel.				1970	1973	1974	1975	1976	1977, prel.			
						Total <sup>1</sup>	Manu- facturing	Petro- leum	Fi- nance, insur- ance						Total <sup>1</sup>	Manu- facturing	Petro- leum	Fi- nance, insur- ance
<b>All areas.....</b>	<b>75,480</b>	<b>101,313</b>	<b>110,078</b>	<b>124,050</b>	<b>136,396</b>	<b>148,782</b>	<b>65,604</b>	<b>30,887</b>	<b>19,972</b>	<b>8,169</b>	<b>16,542</b>	<b>19,156</b>	<b>16,615</b>	<b>18,999</b>	<b>19,851</b>	<b>7,326</b>	<b>5,481</b>	<b>3,095</b>
<b>Developed countries.....</b>	<b>51,819</b>	<b>72,214</b>	<b>82,895</b>	<b>90,695</b>	<b>100,398</b>	<b>108,017</b>	<b>53,364</b>	<b>24,854</b>	<b>9,668</b>	<b>4,577</b>	<b>10,052</b>	<b>10,418</b>	<b>9,509</b>	<b>11,461</b>	<b>11,889</b>	<b>6,018</b>	<b>2,086</b>	<b>1,280</b>
Canada.....	21,015	25,541	28,404	31,038	33,932	35,308	18,658	7,722	3,700	1,518	2,844	3,394	3,412	3,837	3,341	1,344	992	307
Europe <sup>2</sup> .....	25,256	38,265	44,652	46,306	55,139	60,591	31,390	13,920	5,401	2,401	5,751	5,713	4,980	6,169	7,125	4,165	822	848
Euro. Econ. Commun. (EEC) <sup>3</sup> .....	20,104	30,919	35,323	38,773	43,215	47,539	27,502	11,267	3,481	1,919	4,473	4,042	3,620	4,755	5,617	3,755	582	607
Belgium and Luxembourg.....	1,546	2,512	2,945	3,306	3,558	4,155	2,498	452	435	158	426	375	270	263	360	308	-119	96
Denmark and Ireland.....	571	858	1,160	1,295	1,632	1,898	1,025	514	32	45	131	165	170	207	259	222	-45	8
France.....	2,643	4,295	4,902	5,743	6,947	8,093	4,138	913	204	237	585	383	657	484	378	312	-7	14
Germany.....	4,313	7,650	7,971	8,726	10,407	11,003	6,993	2,238	993	588	1,415	1,079	956	1,945	1,609	1,388	16	102
Italy.....	1,464	2,212	2,680	2,679	2,934	2,969	1,964	606	99	85	225	205	90	290	301	267	-42	41
Netherlands.....	1,560	2,352	3,127	3,097	3,600	4,010	2,011	1,233	192	180	413	753	540	909	909	290	454	52
United Kingdom.....	8,016	11,040	12,537	13,927	15,137	17,420	8,872	5,311	1,625	626	1,278	1,081	936	842	1,802	967	325	297
Other Western Europe <sup>4</sup> .....	5,151	7,330	9,329	10,532	11,924	13,052	3,889	364	2,010	483	1,277	1,071	1,369	1,414	1,508	410	239	241
Japan (incl. Okinawa) <sup>5</sup> .....	1,482	2,671	3,319	3,339	3,797	4,082	1,889	1,649	148	228	514	393	233	417	512	299	76	07
Australia, N. Zealand, So. Africa.....	4,067	5,746	6,520	7,013	7,530	7,976	3,428	1,657	329	430	943	919	875	1,038	911	210	196	58
<b>Developing countries <sup>6</sup>.....</b>	<b>19,192</b>	<b>22,904</b>	<b>19,848</b>	<b>26,288</b>	<b>28,884</b>	<b>33,706</b>	<b>12,239</b>	<b>3,014</b>	<b>8,759</b>	<b>2,941</b>	<b>5,840</b>	<b>7,927</b>	<b>6,703</b>	<b>7,047</b>	<b>7,756</b>	<b>1,308</b>	<b>3,362</b>	<b>1,787</b>
Latin American Republics <sup>7</sup> .....	11,104	13,527	14,597	16,394	17,125	18,729	9,331	1,768	2,295	1,206	2,000	2,207	2,155	1,906	2,241	904	369	350
Mexico, Panama, and other Central America.....	3,644	4,500	5,141	5,811	5,817	6,124	2,733	190	1,052	264	609	820	926	370	647	221	35	121
Argentina.....	1,022	1,144	1,138	1,184	1,366	1,505	930	223	91	109	71	47	109	246	273	70	139	26
Brazil.....	1,526	2,885	3,760	4,579	5,416	5,956	3,935	364	564	208	426	464	657	731	681	362	60	118
Chile.....	758	643	287	174	179	187	52	(1)	1	81	6	20	(2)	22	15	5	9	(2)
Colombia.....	584	608	617	648	654	706	436	71	93	43	46	90	53	79	92	68	5	9
Peru.....	744	859	900	1,221	1,364	1,409	157	328	8	74	90	47	-88	46	76	-4	31	(2)
Venezuela.....	2,241	2,051	1,804	1,872	1,506	1,779	917	223	151	305	623	573	344	262	310	157	61	12
Other Western Hemisphere.....	1,858	2,957	4,931	5,773	6,809	9,000	623	1,611	5,783	215	512	848	1,067	1,573	1,672	108	220	1,146
Other Africa <sup>8</sup> .....	2,427	2,376	2,233	2,414	2,775	2,783	266	1,520	76	522	608	1,029	634	610	586	29	461	12
Middle East <sup>9</sup> .....	1,545	226	-6,432	-4,040	-3,730	-3,083	193	-4,378	153	711	1,730	2,092	1,643	1,941	1,891	10	1,607	85
Other Asia and Pacific.....	2,260	3,818	4,519	5,747	5,904	6,267	1,826	2,493	453	287	931	1,660	1,304	1,017	1,367	257	706	195
<b>International and unallocated <sup>4</sup>.....</b>	<b>4,469</b>	<b>6,196</b>	<b>7,335</b>	<b>7,067</b>	<b>7,114</b>	<b>7,029</b>	<b>(x)</b>	<b>3,019</b>	<b>1,546</b>	<b>659</b>	<b>650</b>	<b>811</b>	<b>492</b>	<b>205</b>	<b>(x)</b>	<b>34</b>	<b>28</b>	

D Withheld to avoid disclosure of data of individual companies. X Not applicable. Z Less than \$500,000. <sup>1</sup> Includes industries not shown separately. <sup>2</sup> Equals sum of interest, dividends, earnings of unincorporated affiliates, and reinvested earnings. <sup>3</sup> Includes Mediterranean possessions and countries. Excludes Eastern Europe. <sup>4</sup> As of Jan. 1, 1973, United Kingdom, Denmark, and Ireland became members of EEC. For consistency, data for all years are shown on same basis. <sup>5</sup> Excludes Okinawa. <sup>6</sup> Shipping companies operating under flags of convenience, primarily Panama and Liberia, included in "International and unallocated." <sup>7</sup> Includes coun-

tries not shown below. <sup>8</sup> Includes Egypt and all other in Africa except South Africa. <sup>9</sup> Includes Bahrain, Iran, Israel, Jordan, Kuwait, Lebanon, Qatar, Saudi Arabia, South Yemen, Syria, Truchal States, Oman, and Yemen. Negative position occurs when U.S. parent company's liabilities to the foreign affiliate are greater than its investment in the foreign affiliate.

Source: U.S. Bureau of Economic Analysis, *Survey of Current Business*, August 1978, and supplement titled *Revised Data Series on U.S. Direct Investment Abroad, 1965-76*.

Table 3. Importance of multinational enterprise with foreign participation in manufacturing 14 host countries.\*

	Amount of foreign participation	Year	as % of total				
			Number of persons employed	Turnover	Value added	Wages and salaries	Investment
Germany		1972	22.4	25.1			
Australia (1)	+25%	1972/73	28.5	36.2	34.3	31.3	42.0
	+50%		23.6	28.7			
Austria (1)	+50%	1973	20.7	22.6	22.5	21.9	
Belgium		1968	18.3	33.0			20.4
Canada	+50%	1972	52.4 (1)	51.4 (1)			
	+50%	1973		56.4			
Spain	+50%	1971		11.2			
Denmark		1971		8.0			
Finland	+20%	1972	4.0	5.0			
	+50%	--	2.8	3.6			
France	+20%	1973	19.4	27.1 (2)			24.1
	+50%	--	14.9	21.0 (2)			18.8
Japan	+20%	1972	1.9	3.8			
Norway (1)	+20%	1974	12.3	18.7	18.0		10.6
	+50%	--	7.8	12.9	11.0	8.6	7.0
UK	+50%	1971	10.3	14.2 (6)	13.3	11.8	16.2
Turkey (1)	+10%	1968	4.2	7.6			8.5
Sweden	+20%	1974	8.1	10.1	8.9	8.3	8.2
	+50%	--	4.8	6.2	5.2	5.0	3.2

\*In some cases the data pertains to plants in others to enterprises.

(1) Establishment-based data.

(2) Sales.

(3) ISIC 2 + 3.

(4) 10.0% value for fire insurance only. 10.8% value for fire insurance + stocks at 31st December 1974.

(5) Excluding oil refining and car assembling.

(6) Gross output.

SOURCE: The OECD Economic Outlook. N86. May 1977. PP. 7,8.

4,5,6, and 7).

In Sweden, in particular, employment in foreign manufacturing affiliates of Swedish corporations in the mid-1970s amounted to 24 percent of all manufacturing employment and the share of affiliates' sales in total foreign sales was 32 percent (see Statistical Abstract of the United States 1978).

In view of the available data, it is possible to conclude that the development of MNC is very complex, and is in part contradictory.\* Looking at only limited information, it becomes clear that during the last two decades MNCs have developed powerful world-wide production capacities and they now concentrate large enough economic and financial resources to have a significant impact on economic development at both the global and national levels.

While stressing the necessity for a comprehensive study, it is useful to admit that the majority of works devoted to MNC in the 1970s analyzed their development predominantly from critical positions. These works studied the negative effects of MNC penetration into the economies of different countries and the influence of MNC on rises in unemployment, inflation, imbalance of payments, etc. (see The Firm in the Market Economy 1980).

In 1975 a special U.N. commission was organized to study MNC. In most previously existing works, multinational corporations had been regarded as instruments for exploiting the natural and labor resources of the developing countries. In noting the necessity for such analysis it must be stressed that a few works have presented a complex study of MNC development, in spite of the fact that multinational corporations have become a significant factor in industrial development, especially for certain developed and developing countries.

During the present study it is worthwhile to analyze in detail the following problems:

- how MNCs influence technological innovation and technology transfer;
- how MNCs are involved in industrial cooperation between East and West.

When discussing possible directions for MNC influence on industrial development in different groups of countries it must be noted that multinational corporations appear as very complex conglomerates that carry out such activities as research, production, marketing, and other functions needed for

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\*The contradictions in MNC influence are related to their negative influence on the economy of their host countries. This needs special study.

Table 4. The participation of foreign firms in French economy.

Principales  caracteristiques	En nombre				En pourcentage						
	Entreprises a participation etrangere			Entre- prises a capitaux français	Ensemble de l'in- dustrie	Entreprises a participation etrangere			Entre- prises a capitaux français	Ensemble de l'in- dustrie	Indice de pene- tration etrangere
	Majo- ritaire	Mino- ritaire	Maj. + Min.			Majo- ritaire	Mino- ritaire	Maj. + Min.			
Nombre d'entreprises Effectifs (en milliers)	1257 648	342 175	1599 823	22,900 3897	24,499 4720	51 137	14 37	65 174	935 826	100 100	1396
Remunerations (a) Par personne employee (b)	25,751 397	6221 355	31,972 388	165,032 341	35	156	38	194	806	100	
Ventes hors taxes (a) Par personne employee (b)	193,551 2988	31,469 1797	225,020 2735	661,794 1698	886,814 1879	218	36	254	746	100	2195
Valeur ajoutee brute (a) Par personne employy (b)	48,193 753	11,055 639	59,248 729	221,100 631	280,348 649	172	39	211	789	100	1770
Excedent brut d'exploitation (a) Par personne employee (b)	14,027 219	2583 149	16,610 204	52,166 149	68,776 159	204	37	241	759	100	
Investissements totaux (a) Par personne employee (b)	8981 139	1664 95	10,645 129	40,281 103	50,926 108	176	33	209	791	100	1793
(a) En millions de francs (b) En milliers de francs											

SOURCE: Les Multinationales. Paris 1979. Notice 2.

Table 5. West German direct investment abroad by host country 1952-1977.

	1952- June, 1977*	1962- 66†	1967- 71†	1972- 76†	Jan.- June, 1977*	1952- June, 1977*	1962- 66†	1967- 71†	1972- 76†	Jan.- June, 1977
		D.M.		million		Percentage		distribution		
Total	49,620	1,177	2,757	4,654	2,572					
Europe	n.a.	792	1,622	2,626	n.a.	n.a.	67.3	58.8	56.4	n.a.
Incl. EC‡	n.a.	517	1,009	1,632	n.a.	n.a.	43.9	36.6	35.1	n.a.
of which Belgium	4,976	232	282	404	279	10.0	19.7	10.2	8.7	10.8
France	4,813	135	321	438	138	9.7	11.6	11.6	9.4	5.4
Netherlands	3,205	47	199	355	116	6.5	4.0	7.2	7.6	4.5
G.B.	2,103	36	96	250	138	4.2	3.1	3.5	5.4	5.4
Italy	1,680	53	94	156	n.a.	3.4	4.5	3.4	3.4	n.a.
EFTA§	n.a.	196	440	574	n.a.	n.a.	16.7	16.0	12.3	n.a.
Switzerland	4,694	158	270	394	114	9.5	13.4	9.8	8.5	4.4
Austria	1,635	18	126	76	31	3.3	1.5	4.6	1.6	1.2
Spain	2,880	58	144	358	n.a.	5.8	4.9	5.2	7.7	n.a.
America	n.a.	256	876	1,496	n.a.	n.a.	21.8	31.8	32.1	n.a.
North America	9,522	129	522	906	976	19.2	11.0	18.9	19.5	38.0
US	6,114	48	303	654	778	12.3	4.1	11.0	14.1	30.0
Canada	3,408	80	219	252	198	6.9	6.8	7.9	5.4	7.0
Latin America	n.a.	127	353	590	n.a.	n.a.	10.8	12.8	12.7	n.a.
Including S. America	n.a.	103	211	411	n.a.	n.a.	8.8	7.7	8.8	n.a.
of which Brazil	3,747	49	153	361	295	7.6	4.2	5.6	7.8	11.0
Africa	n.a.	75	175	272	n.a.	n.a.	6.4	6.3	5.8	n.a.
Asia	n.a.	40	68	255	n.a.	n.a.	3.4	2.5	5.5	n.a.
Incl. Iran	n.a.	n.a.	n.a.	n.a.	40	n.a.	n.a.	n.a.	n.a.	1.1
Australia	n.a.	13	16	5	n.a.	n.a.	1.1	0.6	0.1	n.a.
Not specified by country	10,023	0	0	0	442	20.2	0	0	0	17.0

SOURCES: Federal Ministry of Economic Affairs, Bonn; Klanner 1977; Kraegenau 1971; Author's calculations.

Notes

\*Data for top 10 countries only accessible to the author.

†5-year averages.

Figures may not add precisely because of rounding.

n.a.=data not accessible to the author, though no such individual country among top 10 recipients.

‡ Including Denmark, GB, and Ireland.

§ Excluding Denmark and GB.

Table 6. Patents issued to national and foreigners (selected countries and years).

Issuing country	1955	1965	1972
<b>United States</b>			
Total number	30,535	62,857	74,798
Percentage			
to U.S. national	87.0%	80.1%	68.9%
to EEC nationals*	8.9	13.5	17.6
to other foreigners	4.1	6.4	13.5
<b>Germany</b>			
Total number	14,760	16,780	20,600
Percentage			
to German nationals	77.8%	59.7%	46.8%
to U.S. nationals	6.0	15.9	22.2
to other foreigners	16.2	24.4	31.0
<b>France</b>			
Total number	23,000	41,800	46,217
Percentage			
to French nationals	53.3%	34.9%	23.3%
to U.S. nationals	12.0	20.4	24.2
to other foreigners	34.7	44.7	52.5
<b>United Kingdom</b>			
Total number	37,551**	55,507**	42,794
Percentage			
to U.K. nationals	59.9%	43.7%	23.6%
to U.S. nationals	18.3	23.2	30.4
to other foreigners	21.9	33.1	46.0
<b>Japan</b>			
Total number	8,557	26,905	41,454
Percentage			
to Japanese nationals	74.9%	66.1%	70.3%
to U.S. nationals	13.6	17.1	14.3
to other foreigners	11.5	16.8	15.4

\*All nine countries presently members of the EEC.

\*\*Patents applied for, not patents issued.

SOURCE: For 1955, P.J. Federico, "Historical Patent Statistics," Patent Office Society Journal 46, no.2 (1964). For 1965 and 1972, Industrial Property, December 1966 and December 1973 issues, respectively.



Table 7. Innovations initially introduced in the United States, United Kingdom, Continental Europe, and Japan, 1945-1974, classified by perceived purpose.\*

Type and purpose of innovations	United States		United Kingdom		Continental Europe		Japan	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
PROCESS INNOVATIONS								
Material-saving	58	18.8	122	47.8	95	53.7	12	48.1
Labor-saving	189	61.1	66	25.9	32	18.1	4	16.0
Capital-saving	58	18.8	61	23.9	43	24.3	7	28.0
Multiple-factor- saving	4	1.3	6	2.4	7	3.9	2	8.0
Total	309	100.0	255	100.0	177	100.0	25	100.0
PRODUCT INNOVATIONS								
Material-saving	117	22.6	127	40.3	100	50.3	20	29.0
Labor-saving	142	27.5	13	4.1	9	4.5	2	2.9
Novel-function	106	20.5	50	15.9	33	16.6	12	17.4
Other	152	29.4	125	39.7	57	28.6	35	50.7
Total	517	100.0	315	100.0	199	100.0	69	100.0

\*For detailed definitions of concepts see W.H. Davidson, "Patterns of Factor-Saving Innovation in the Industrialized World". European Economic Review 8. No. 3. October 1976.

SOURCE: Harvard Multinational Enterprise Project.

initiating and concluding the production-selling cycle.

An important sphere of MNC activity is participation in international trade and economic cooperation between the groups of countries. Proceeding from this it is possible to distinguish four basic areas in which MNCs influence industrial development.

1. The acceleration of the innovative process through development and installation of new kinds of machines and technology, and the transfer of technology through MNC affiliates.
2. The formation and development of industrial bases and infrastructures in different countries through investment for development of affiliates, and so on.
3. Increased economic cooperation and technology transfer in the area of international economic relations between different groups of countries (developed countries, both market and planned, and developing countries).
4. Extraction of raw materials by MNCs, mainly in the developing countries, and how this influences the development of the world-wide system for distribution of resources, formation of prices, etc.

A general scheme of the influence of MNCs on the industrial development of the groups of countries is presented in Figure 1.

### 3. A QUALITATIVE ANALYSIS OF THE INFLUENCE OF MNCs

#### 3.1. The Influence of MNCs on the Development and Assimilation of Innovative Technology

Technology transfer and exchange of scientific ideas among different groups of nations is very important for accelerating scientific and technological progress and the industrial development process in all countries, regardless of their level of development.

It is possible to evaluate (approximately) the distribution of new technology throughout the world by analyzing data about patents issued by various national governments. These data show a rapid growth of foreign-owned patents throughout the world. It must be stressed, of course, that the issuance of patents to foreigners is not a reliable indicator of the rate of interdependence, but that these data reflect the international expansion of technology transfer. In Table 6, figures about patents issued in different countries show this trend.

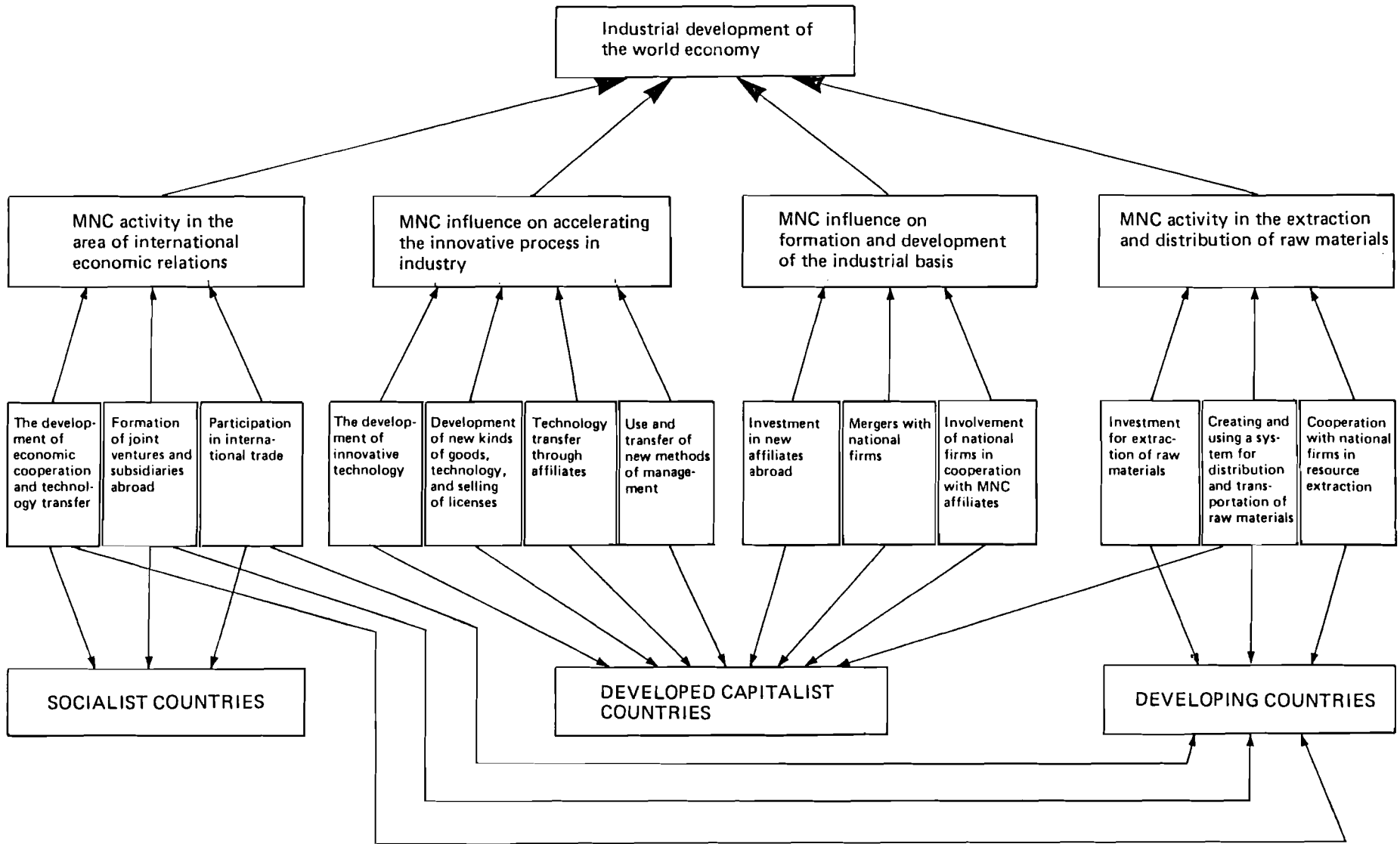


Figure 1. A general scheme showing MNC influence on the industrial development of different groups of countries.

The level of technology exchange and the usefulness of this process are different, of course, for different countries and groups of countries and hence they demand special analysis. For socialist countries, access to contemporary Western technology is made difficult by the creation of special mechanisms for export control.

Multinational corporations are involved in technology transfer because they have highly developed international systems for production and marketing. So they have become important channels for world wide transfer of new products and technological processes. The acceleration of technology transfer through MNC have made foreign direct investment's "primarily a movement of knowledge rather than a movement of funds". (See Barnett and Muller 1975, Vernon 1977, and Sampson 1973.)

Several reports that appeared in the last decade confirmed the strong correlation between the multinationality of firms and the intensity of their research and development. This is also shown in Part 3.2. (See Stobaugh 1974).

In the past, many large multinationals have developed with little regard to industrial innovations. During the 1960s the major petroleum companies rarely spent more than one percent of their sales revenues on research and development. The same can be said about the leading automobile companies (Johnson 1975, Bertin 1975, and Buckley and Cosson 1976). In the 1970s, however, this trend began to change. MNCs began to work more actively in the area of innovation and development of new products, partly because that activity tends to go hand in hand with a rapid increase in sales and profits, so that ties between innovation and increased profits strengthened during the last 10-15 years (Franko 1976, Lietaer 1979).

Lack of recent information about MNC expenditures on research and development make an analysis of these expenditures very difficult. However, certain facts testify to the fact that in the 1970s, MNC investment in innovating products and processes increased significantly. In 1971 and 1972 the leading U.S. MNCs, well-known for their product innovations, invested over one billion dollars annually in their foreign subsidiaries, mostly in Europe, on activities that are classified as research and development (Vernon 1977).

There are certain differences in the research and development efforts of European, American, and Japanese multinationals. In recent years, European MNCs have been very active in technological development. According to one report, continental European MNC are quite conspicuous in their R & D efforts. 53% of the 85 continental MNCs that manufacture in seven or more countries were among the three most R & D intensive industries, compared to 44% of the 187 American multinationals. Only 3-5% of the 21 continental MNC manufacturing in fewer than seven countries were not based in high technology industries (Severn and Lawrence 1974, Wolf 1975, and Vernon 1977).

This high level of R & D effort is especially remarkable in the largest European MNC, even when compared to the level of R & D conducted by U.S. MNC of similar size. There are also some differences among U.S., European, and Japanese MNC in the kind of technology in which these companies specialize. According to the results of one investigation during the last 30 years, the attention of European MNC was oriented primarily toward developing new technologies for manufacturing products that were already being mass produced in the U.S., rather than toward the development of new products (Severn and Lawrence 1974, Wolf 1975, and Vernon 1977).

During the period 1945-1975, the innovation policies of the U.S. MNC were oriented toward labor-saving innovations (61%), compared to 18% and 16% in European and Japanese MNC. The main objective of most European and Japanese innovation is the efficient use of raw materials. Only 18.8% of the U.S. MNC were directed toward material-saving innovations, compared to 53.7% and 48.1% in European and Japanese multinationals. See Table 7.

The scarcity of information needed for a comprehensive analysis of influence of the MNCs on the innovation process in industry makes this task rather difficult. But an analysis of the data available shows not only the complexity of this problem, but also the important role of MNC in the process of innovation and technology transfer. One important characteristic of MNC is related to the problem of innovating: these corporations demonstrate a high degree of involvement in change-oriented activities (Creamer 1976).

According to one special report, there are ten basic channels for the international transfer of technology: trade, purchase of special services, personal contacts, technical assistance and joint production agreements, the presence of foreign military troops in a country,\* involuntary leakage of technological information, observation and imitation, licensing agreements, joint ventures, and multinational firms.\*\*

The major advantage enjoyed by MNC is that they can employ most of these mechanisms for technology transfer, as the establishment of manufacturing activity by a foreign company will inevitably involve all of these methods of transfer. So as a rule, the modern MNC can function as producer, innovator, and vehicle for technology diffusion. The combination of their economic independence, structural alignment, and economic power suggests that these corporations could be among the most effective agents of technology transfer. One of the oldest

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\*Although the presence of military troops in a country is a doubtful source of technology transfer.

\*\*For socialist countries technical assistance and exchange of technology and licenses play the most important roles.

but most comprehensive studies shows that during the last two decades the majority of MNCs have not only become important agents in the transfer of technology but that this structural form of company organization is "...one of the most important mechanisms, when transfer between nations is under scrutiny". (See Parker 1978).

But while it is obvious that multinational corporations are important to the processes of innovation and technology transfer, it must be stressed that there is a marked lack of data indicating in detail how these organizations influence the speed, cost, type, and location of these transfers. Many observers have studied the importance of MNC influence on the worldwide spread of technology. However, there exists only fragmentary evidence that the rate of international diffusion of technology through MNC and the importance of this process for industrial development of individual countries is increasing (Bonin 1972).

Thus the peculiarities of MNC involvement in technology transfer and the process of industrial innovation need additional, more detailed analysis based on new sources of information. A special analysis of the influence of the process of technology transfer through MNC affiliates on the industrial development of different groups of countries (predominantly socialist and developing) is also of pressing topical interest.

### 3.2. The Involvement of Multinational Corporations in Economic Cooperation Between East and West

East-West economic relations have developed rapidly in the last 15 years. During this period East-West trade grew significantly, reaching US \$96.7 billion at the end of the 1970s (Feld 1980). Along with trade relations, so-called "new forms" of economic cooperation have arisen during the last ten years in the form of long-term compensation projects, and various forms of industrial cooperation, including co-production, licensing, joint ventures, and technology transfer between Western business firms and industrial organizations in socialist countries.

During the 1970s multinational corporations began to take active part in the development of economic relations between socialist and capitalist countries. At the end of the 1970s, many of the largest American, European, and Japanese MNC were deeply involved in East-West economic relations and had signed many agreements for mutual cooperation in different industries. See Table 8.

Cooperation between multinational corporations and socialist countries takes many different forms. The various **categories** of contracts in common use between MNC and economic units of socialist countries range from simple technical

Table 8. Involvement of the biggest MNC in East-West economic cooperation 1976.

	Bulgaria	Hungary	Poland	GDR	Rumania	Czechoslovakia	USSR	Yugoslavia
Exxon	•				•		•	
General Motors		•	•				•	•
Royal Dutch-Shell	•	•	•	•	•	•	•	
Ford Motor		•				•		•
Mobil Oil		•	•		•		•	
British Petroleum	•	•	•	•	•		•	
Unilever		•	•		•	•		•
IBM	•	•	•	•	•	•	•	•
General Electric		•	•		•	•	•	•
ITT	•	•	•		•	•	•	•
Philips		•	•		•	•	•	•
August Thyssen Hutte			•			•	•	•
Hoechst	•	•	•	•	•	•	•	•
ENI	•		•	•	•	•	•	•
Daimler-Benz		•	•	•			•	•
Krupp	•	•	•	•	•	•	•	•
U.S. Steel		•				•	•	•
BASF		•	•	•	•		•	•
Renault		•	•		•	•	•	•
Siemens	•	•	•	•	•	•	•	•
Volkswagen		•			•		•	•
Bayer	•		•	•	•			•
Dupont		•	•	•		•	•	•
Toyota		•	•	•			•	
ICI	•	•	•	•	•	•	•	•

SOURCE: Charles Levinson. Vodka Cola Stock. 1977.

assistance and license contracts to joint equity ventures.\* These types of cooperation contracts can be divided into groups:

- know-how or technological assistance contracts;
- licenses with payment in cash, royalties, or resultant products;
- subcontracting by the MNC in the host country; this refers to contracts under which the MNC provides the host country with technical (construction) know-how, and machinery, equipment, and parts, but does not have significant on-site installation or supervisory responsibilities;
- turnkey contracts; this includes all agreements in which the MNC as suppliers have significant on-site installation or supervisory responsibilities;
- cooperation contracts, in which partner specializes either in the production of a part of a product, which is assembled by one or both partners, or in the production of a limited number of finished products that are exchanged to complete each partner's range of products;
- joint ventures provide for the co-ownership of capital, co-management, and the sharing of risk and profit. (See Parker 1978).

In reality, a contract can contain an elaborate combination of the forms mentioned or have a more complex form.

Using available data on the development of East-West cooperation, it is possible to make a general analysis of types of contracts involving MNC participation in force at the end of the 1970s.

As shown in Table 9, the Soviet Union has a strong preference for turnkey contracts, i.e., contracts for the delivery of entire plants. In a sample of predominantly West European MNCs, 67.6% of the Soviet contracts were turnkey contracts; in a U.S. MNC sample, the figure was 66.1%. The corresponding percentages for Bulgaria are 42.9% and 38.5%, respectively. No other type of contract has such strong host country preferences. In second place are co-production and specialization: 47.3% of Hungary's projects with West European MNC are of these types.

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\*Organization of joint ventures with participation by Western firms are now possible in Yugoslavia, Rumania, Hungary, Poland, and Bulgaria, due to special laws.



Table 9. Types of industrial cooperation contracts with host countries (%).

	Licenses and know-how	Turnkeys	Coproduction	Subcontracting	Joint ventures	Turnkeys
a. West European MNCs (n = 98, no. of contracts = 298)						
USSR	8.1	67.6	21.6	2.7	--	--
Bulgaria	35.8	42.9	14.2	7.1	--	--
Czechoslovakia	50.0	--	40.1	9.9	--	--
East Germany	--	59.9	40.1	--	--	--
Hungary	33.2	13.1	47.3	5.7	--	--
Poland	31.4	28.3	37.4	3.0	--	--
Romania	20.8	39.6	15.1	11.3	13.2	--
b. U.S. MNCs (n = 110, no. of contracts = 371)						
USSR	25.0	66.1	5.4	3.5	--	--
Bulgaria	63.6	27.3	9.1	--	--	--
Czechoslovakia	63.6	30.3	6.1	--	--	--
East Germany	53.8	38.5	--	7.7	--	--
Hungary	57.1	14.3	14.3	5.7	8.6	--
Poland	56.8	29.7	8.1	5.4	--	--
Romania	49.0	43.4	3.8	--	3.8	--
c. Japanese MNCs (N = 14, no. of contracts = 22)						
USSR	25.0	62.5	12.5	--	--	--
Bulgaria	50.0	50.0	--	--	--	--
Czechoslovakia	--	100.0	--	--	--	--
East Germany	--	--	--	--	--	--
Hungary	50.0	50.0	--	--	--	--
Poland	25.0	50.0	25.0	--	--	--
Romania	--	100.0	--	--	--	--

SOURCES: ECE (1973 and 1976); Holt, Marer and Miller (1976),  
Chung Sung-Beh (1975); and Stankowsky (1974).

Comparing U.S. and West European MNC with respect to contract form, we find no significant difference between the percentage of U.S. and West European turnkey contracts with the USSR (66.1% and 67.6% respectively) but some differences with respect to East Germany and Bulgaria turnkey projects (38.5% vs. 59.9% and 27.3% vs. 42.9%) with U.S. MNC because of the more recent arrival of the latter.

Contracts between Japanese MNC and Soviet state organizations follow virtually the same pattern as the U.S. and West European contracts, with 62.5% concentrating on turnkey agreements, but the Japanese firms negotiated high percentages of turnkeys with more of the other host countries (50% in Poland, Bulgaria, and Hungary, and 100% in Czechoslovakia and Rumania).

Among the three groups of MNC, European MNC have the most experience in economic cooperation; Japanese MNC are less experienced in such cooperation.

It would be useful to analyze in detail economic cooperation between MNC and state enterprises in such areas as technology transfer, financing, and marketing, as these activities are common to the majority of contracts.

Western countries have placed legal constraints on technology transfer through MNC in East Europe. In spite of this, this process has developed quite rapidly during the last decade. Technology transfer depends greatly upon economic peculiarities of individual socialist countries and their specialized needs as set forth in long-term plans for mutual economic development and programs of integration.

Table 10 gives an overview of the types of technology being transferred by U.S. West European, and Japanese MNC, through cooperative projects in each of the socialist countries. Among these countries, the USSR has received the largest share of petroleum-extraction technology, with 86.7% of U.S. MNC contracts in this sector. This followed by construction technology (53%), a consequence of the high concentration of turnkey projects in that country. The next type of technology concentrated in the USSR is food and agricultural technology (41.8%) from West European and 42.8% from U.S. MNC projects.

After the USSR, the second largest country in GNP in East Europe is Poland, which is the recipient of substantial shares of MNC technology in the chemical (19.6% from U.S. MNC and 25% from West Europe in MNC), machinery (15.7% and 31%), and electronics (14.7% and 50%) sectors.

Rumania concentrates its attention on receiving technology for producing transport equipment (28%) and machinery (12% from U.S. MNC and 25% from West European MNC).

Table 10. Technology transfer, by project, as a percentage distribution in host countries.

a. U.S. MNCs (N = 110, no. of projects = 371)								
	USSR	Bulgaria	Czech.	East Germany	Hungary	Poland	Romania	7-Country Total
Agriculture & Food	44.4%	11.1%	7.4%	3.7%	14.8%	14.8%	3.7%	100%
Textiles, Paper	30.4	4.3	21.7	8.7	8.7	8.7	17.4	100
Chemicals	48.5	8.2	7.2	3.1	5.2	19.6	8.2	100
Metals	59.1	--	4.5	--	4.5	22.7	9.1	100
Machinery	53.9	1.1	7.9	--	9.0	15.7	12.4	100
Electrical Equipment	50.8	6.2	3.1	--	10.8	15.4	13.8	100
Transport Equipment	33.3	4.2	4.2	8.3	12.5	16.7	20.8	100
Mining	86.7	--	--	--	--	--	13.3	100
Construction	53.3	6.7	6.7	8.9	6.6	8.9	8.8	100
Services	62.5	6.3	9.4	--	3.1	6.3	12.5	100
b. West European MNCs (N = 98, no. of projects = 298)								
Food & Agriculture	41.8%	16.7%	--	8.3%	8.3%	8.3%	16.6%	100%
Light Industry	15.0	--	--	--	55.0	20.0	10.0	100
Chemicals	25.0	3.8	3.8	1.9	25.0	25.0	15.5	100
Metals	31.8	--	--	--	4.5	45.5	18.2	100
Machinery	6.8	6.8	6.8	3.9	29.1	25.2	21.4	100
Electrical Equipment	6.1	3.0	3.0	--	39.4	36.4	12.1	100
Transport Equipment	4.7	2.3	9.3	2.3	37.2	16.3	27.9	100
Services	7.7	7.7	--	--	23.0	30.8	30.8	100
c. Japanese MNCs (n = 14, no. of projects = 22)								
Light Industry	33.3%	--	--	--	33.3%	33.3%	--	100
Chemicals	50.0	--	30.0	--	--	--	20.0	100
Metals	25.0	25.0	--	--	--	50.0	--	100
Electrical Equipment	--	--	--	--	50.0	50.0	--	100
Transport Equipment	50.0	--	50.0	--	--	--	--	100
Services	--	100.0	--	--	--	--	--	100

SOURCE: Negahdhi, A. ed. Functioning of the Multinational Corporation: A Global Comparative Study. NY: Pergamon Press, 1979. P. 176.

Hungary acquires technology predominantly in the light industry and electrical equipment, mostly from West European and Japanese MNC.

In several reports no strong correlation was found between type of contracts and complexity of transferred technology. In the majority of cases, the technology transferred was simple even when complex co-production and joint venture were involved (Parker 1973).

An important characteristic of the technology transfer process is that as a rule, it tends to exclude new and competitive technology. However, the degree to which technology is transferred can be estimated by the duration and complexity of the contract. For example, according to one estimate, a low level transfer is indicated under short-term licensing agreements, in which the use of transferred technology is less effective than in long-term co-production and joint venture projects, where the technology is used more extensively (ECE, 1973, St. Charles 1974, and Functioning of the Multinational Corporations: A Global Comparative Study 1979). But the absence of sufficient data makes it difficult to substantiate this.

Another important characteristic of the technology transfer process is the existence of technology export controls, which decrease the effects of technological exchange between countries. But in spite of these controls, MNC and their affiliates throughout the world could in the future serve as effective channels for technology transfer and industrial cooperation between East and West.

In socialist countries a) a high proportion of the projects are financed through counter-purchase or compensation agreements; b) a significant share of the MNCs contributions consists of intangible assets, such as patents, know-how, trademarks, patents, services, and so on.

Because as a rule MNCs have a well developed global marketing organization, cooperation with them in the area of marketing could be very fruitful for socialist countries, especially in "three-party-cooperation" with the participation of developing countries.

#### 4. CONCLUSIONS

The preliminary analysis of data available about MNC and the influence of MNC on industrial development of different countries allows us to make several conclusions.

1. Although much study has been devoted to MNCs, there is no universal definition of a multinational corporation in scientific literature. In general, an MNC is a large corporation that carry out complex business activities through affiliates in several foreign countries. As a rule manufacturing MNC carry out a complex set of operations ranging from R & D to marketing a variety of goods.

2. During the last ten years the influence of manufacturing MNC has increased significantly and these corporations have now become an important factor in the industrial development of many developed and developing countries. According to recent forecasts, the role of MNC and their influence on industrial development will continue to increase in the future.

3. A comprehensive analysis of MNCs' influence on industrial development would be very difficult, as there is practically no information about their development in national and international statistical sources.

4. The influence of MNC has a strong correlation to the increasing importance of direct foreign investment in national economies as well as to the increase in interdependence and internationalization of economic development.

5. There are several main directions for the influence of MNCs on industrial development. This is of course not equal for the different groups of countries. MNCs influence developing countries and certain developed countries more than socialist countries. This influence is carried out through direct foreign investment, technology transfer, creating affiliates, extraction and distribution of raw materials, and so on.

6. The influence of MNCs on the industrial development of the socialist countries is very limited and is carried out mainly through international trade, economic cooperation, and technology transfer.

7. One of the main directions of MNC influence on industrial development is the process of technology transfer through affiliates. Now in this affiliates is concentrated significant scientific and technological potential. During the 1970s MNC investment in R & D activities increased, especially in European and Japanese corporations. But in spite of this, MNCs are now oriented mainly

toward assimilation of new ideas and production of new goods and not toward generating new inventions. The increasing attention being paid to R & D activities by MNC is related to the formation of closer ties between innovation and profits during the last decade.

8. In the area of R & D, U.S. MNCs have been largely oriented toward labor-saving innovations; in the last decades European and Japanese MNCs, on the contrary, use innovation for more efficient use of raw materials.

9. Multinational corporations now take a very active part in transferring technology through different channels, such as licensing agreements, joint ventures, technical assistance, technical service, etc. However, the influence of MNC on technology transfer at the international and national levels, as well as the importance of technology that is transferred through MNC to developing and socialist countries, need special study.

10. During the 1970s MNCs began to take part in industrial cooperation between East and West. MNCs now cooperate with socialist countries in a number of different forms, from licensing agreements to joint ventures. However, the process of technology transfer between East and West is limited by the existence of certain restrictions in Western countries.

11. An analysis of available data shows that MNC now have an important influence on the industrial development of many countries. This problem needs more comprehensive study, especially in the field of technology transfer, direct foreign investment, extraction of raw materials, and so on. Only after understanding of the peculiarities of MNC influence and their development, system of management etc., would it be possible to propose recommendations about using their opportunities for industrial development of different groups of countries.

Thus it is possible to conclude that a more comprehensive study of peculiarities of MNC influence on industrial development is very important, and it would be a useful analysis in IIASA's Industrial Development project.

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