
CHAPTER III

The Economic Implications of East-West Trade and Technology Transfer

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The Economic Implications of East-West Trade and Technology Transfer

Policy decisions regarding the future of U.S. trade, including transfer of technology, with the Communist world require weighing the economic and political benefits of such trade against the military risks it may incur. This is difficult, not only because it entails the comparison of unlike things, but because the economic merits, particularly of technology sales, are difficult to assess and the results of such assessments are controversial. For instance, the profits and other returns of technology exports to the East must be balanced against the possibility that unrestrained technology transfer by U.S. corporations could be detrimental to this country's long-term economic interests. In this connection, the economic dangers of technology sales currently lie primarily in transactions with our Western trading partners and not in trade with the East where major risks are military; the Communist nations at the moment have a relatively small export capacity and a systemic difficulty in rapidly assimilating and diffusing Western technology. This is not to say, however, that this situation could not change, especially with the help of Western management expertise and Eastern impetus to expand trade in technology.

The economic balance sheet which must be drawn up in technology trade includes the following considerations: On the positive side are the final gains resulting from the sale of patents, licenses, construction of turnkey plants, and the sale of items that may embody sophisticated technology. The balance of payments in such items has historically been decidedly in favor of the United States. Further, even where the direct income from technology transfers is small, broad agreements in other trading areas often depend critically on such transfers, and there may be indirect commercial benefits to U.S. firms operating in Eastern markets.

On the other hand, the possibility exists that transferred technology can be used to build industries in the purchasing nation which will eventually supplant U.S. export markets in that country or in other nations, perhaps eventually even in the United States itself. These situations would clearly threaten a loss of employment in the United States. The difficulties now being encountered by Occidental Petroleum in the United

States and by other companies in Italy and West Germany as a result of buy-back agreements with Eastern Europe highlight these fears, as does the U.S.S.R.'s emergence as a competitor to Fiat in Europe and Canada with cars produced at the Italian-built Togliatti (Volga) auto plant.

In an attempt to evaluate the economic value of East-West trade and technology

transfer to the United States, this chapter examines the following issues:

- . the volume of East-West trade in general and trade in technology in particular,
- the potential for growth in East-West trade, including trade in technology, and

- the impact of sales of technology to the East on the U.S. economy.

Discussions of the value of Western technology to the Soviet and Chinese economies appear in chapters X and XI.

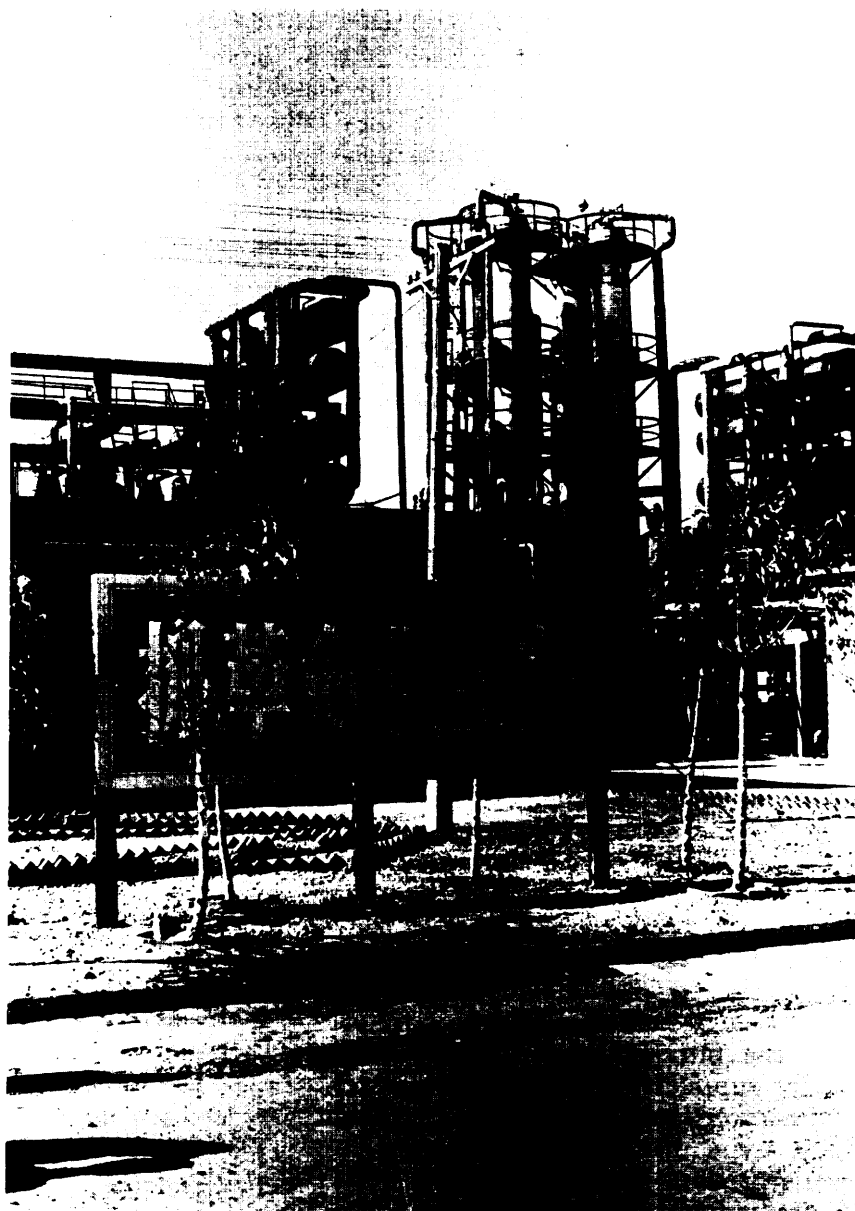


Photo credit: The National Council for U.S. China Trade

Ammonia concentrator, La Madian #2 Multipurpose Pump Station, Taching, China

EAST-WEST TRADE AND U.S. MARKET SHARES

THE PRESENT VOLUME OF EAST-WEST TRADE

Trade with the Communist world has never constituted a large part of U.S. foreign trade. Despite the fact that the total turnover of American trade with the East grew by approximately 50 percent between 1977 and 1978, the volume of this business in absolute terms, including sales of agricultural commodities, is small. In 1978, the United States earned about \$4.5 billion from exports to Communist nations, half of which came from the U.S.S.R. The net trade balance with these countries was \$2.7 billion. This must be evaluated in the context of 1978 U.S. worldwide trade turnover of over \$315 billion and overall deficit of \$28 billion. The Communist world thus accounted for only 3.1 percent of U.S. exports and 1 percent of U.S. imports in 1978. Even the recent acceleration in trade with the People's Re-

public of China (PRC) has done very little to alter this overall trade picture (see table 2).

Part of the reason for these magnitudes lies in the fact that for both trade in general and trade in technology in particular, the United States has captured only a small share of the Eastern market relative to the other countries of the industrialized West. Since the end of World War II, the United States has never held more than 10 to 15 percent of the total Western trade with Communist nations (see table 3 and figure 1). There are a variety of reasons for this: because of its vast domestic market the United States has traditionally been relatively less active in foreign trade than Japan or Western Europe; Western and Eastern Europe are natural trade partners; and as chapters VII to IX argue, America's allies have been less restrictive in controlling trade with the Communist world.

Table 2.—U.S. Trade With the World and With Selected Nonmarket Economy Countries
(in millions of U.S. dollars)

U.S./world trade

	1977	1978	January to June 1979
Exports.....	121,206	143,659	85,532
Imports.....	147,492	172,025	95,506
Balance.....	-26,286	-28,366	-9,973
Trade turnover (exports plus Imports)	4,077	6,303	3,972

U.S. trade with selected nonmarket economies

	Exports			Imports			Balance		
	1977	1978	Jan-Jun 1979	1977	1978	Jan-Jun 1979	1977	1978	Jan-Jun 1979
U. S. S. R.,	1,623	2,249	1,457	422	2,544	2,433	1,201	1,995	1,214
People's Republic of China	171	818	704	197	324	245	-26	593	459
Poland.....	437	677	275	327	439	212	110	238	63
Romania.....	259	317	260	231	347	167	28	29	93
Czechoslovakia	74	105	83	36	163	25	38	47	58
East Germany.....	36	170	138	17	205	19	19	135	119
Hungary.....	80	98	42	47	69	48	33	29	-6
Bulgaria.....	24	48	31	26	19	23	-2	29	8
Total	2,704	4,483	2,990	1,303	1,820	982	1,401	2,663	2,008
		1977			1978			January to June 1979	
NME share of total U.S. trade									
Exports (percent).....		2.2			3.1			3.5	
Imports (percent).....		.9			1.09			1.03	

NOTE Both Imports and exports are valued on a free-along-side basis
SOURCE U S Department of Commerce

Table 3.—The Trade of the Industrial Market Economies With Eastern Europe and the Soviet Union

	Imports, c.i. f.					Exports, f.o. b.					Trade balances			
	Value million u s dollars)	Percentage share of country's total imports	Percentage change over the same period of the preceding year			Value (million u s dollars)	Percentage share of country's total exports	Percentage change over the same period of the preceding year		Exports minus Imports* (million U.S. dollars)				
		1977	1976	1977	Jan - May 1978		1977	1976	1977		Jan.- May 1978	1976	1977	Jan.- May 1978
West Germany	4,474	4	25	11	27	\$ 6,649	6	-3	6	14	\$2,439	\$2,327	\$ 952	
Italy	2,596	5	28	6	2	2,287	5	-10	16	-10	-339	-153	-94	
Yugoslavia . .	2,714	28	16	26	4	2,044	39	8	1	14	55	-446	-123	
France	2,216	3	18	11	22	2,781	4	5	2	-12	832	663	119	
United Kingdom	2,172	3	23	16	5	1,457	3	-9	23	35	-521	-584	11	
Finland	1,795	24	2	11	9	1,709	22	14	14	24	2	32	85	
Austria	1,249	9	15	14	15	1,416	14	1	10	17	228	214	114	
Sweden	1,141	6	4	0	-22	945	5	-6	-8	-1	-19	-116	56	
Netherlands	1,040	2	18	11	15	816	2	-4	7	5	-116	-171	-57	
Belgium-Luxem..	718	2	-5	22	28	760	2	-8	-4	-2	222	77	1	
Denmark	593	4	10	4	9	286	3	-9	2	1	-263	-275	-124	
Switzerland . .	598	3	45	20	78	878	5	7	11	34	309	298	102	
Spain	345	2	-7	-20	-11	284	3	18	-6	15	-91	-32	17	
Greece	385	6	47	-5	54	334	12	9	16		-70	-10	-1	
Norway	395	3	38	15	-3	276	3	8	0	11	-48	-107	-71	
Turkey	344	6	31	7	1	172	10	35	4	35	-121	-135	1	
Ireland	119	2	0	30	1	29	1	-43	46	51	-67	-85	-30	
Iceland	75	12	7	15	12	62	12	1	51	-51	-14	-6	-9	
Portugal	166	3	97	1	-14	81	4	96	-3	-37	-66	-70	-41	
Total Western Europe	23,135	5	18	12	13	\$23,266	5	0	7	9	\$2,352	\$1,421	\$ 908	
United States	977	1	19	5	49	2,542	2	26	-27	35	2,638	1,626	1,203	
Canada	189	0	22	-4	-11	546	1	31	-31	15	595	362	132	
Japan	1,627	2	-1	19	0	2,669	3	27	-5	2	1,590	1,225	625	
Subtotal	2,793	1	7	12	16	\$ 5,757	2	27	-18	19	4,823	3,213	1,960	
Grand total	25,928	3	17	12	13	\$29,023	4	5	1	11	\$7,175	\$4,634	\$2,868	

a Exports f.o.b. minus imports f.o.b. The latter have been adjusted according to data taken from IMF, *International Financial Statistics* for each industry

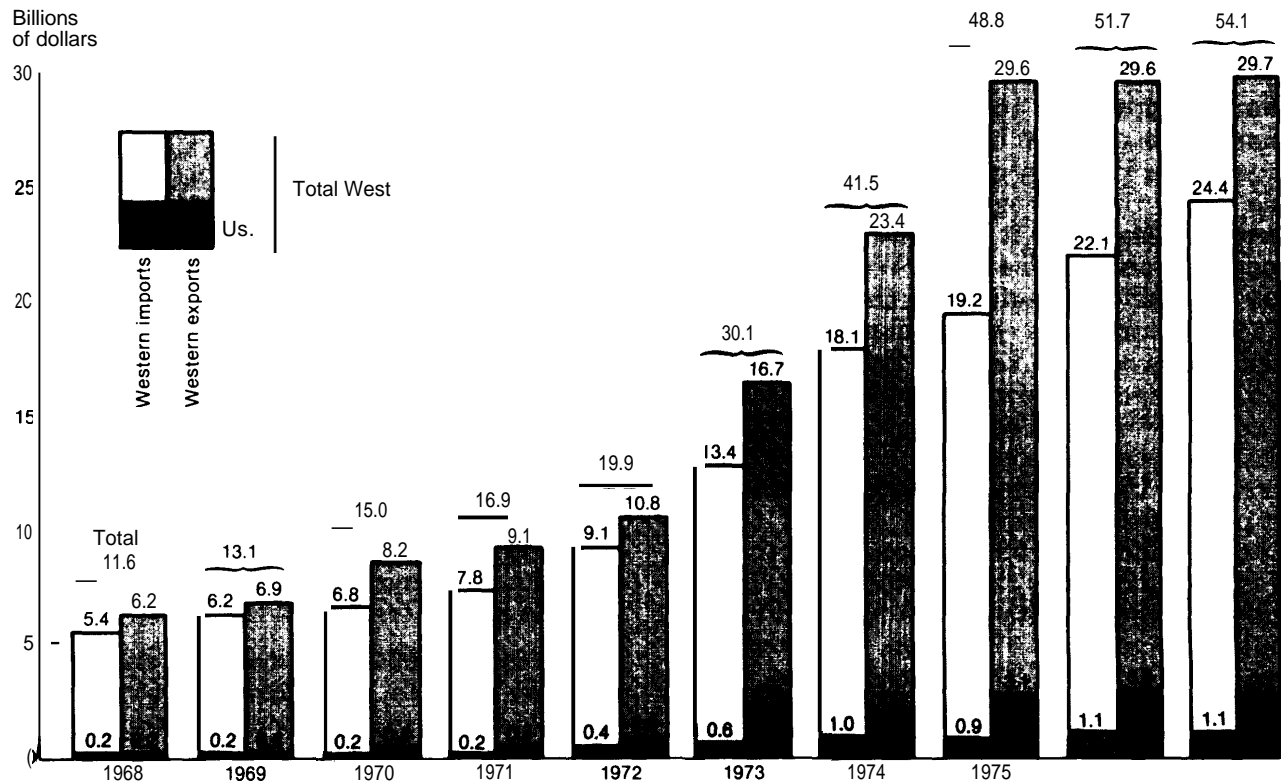
SOURCES: OECD, *Statistics of Foreign Trade, Series A, Pans*, IMF, *Direction of Trade and International Financial Statistics*, Washington, D C national statistics; and U N Economic Bulletin for Europe, vol. 30, No 1, New York, 1978

But equally important is the fact that overall volumes of East-West trade are artificially low. Foreign trade has played a relatively minor role in the Communist world and within this already circumscribed arena, the volume of East-West trade is particularly small. China until very recently virtually excluded itself from world markets. The Soviet Union has been far more active in world trade, but in 1977 imported only \$150 in goods per capita, as compared to \$700 for the United States.

U.S. POLICIES AFFECTING TRADE VOLUMES

American policies on trading with the Communist world probably influence U.S. market shares in existing trade more than they do the volume of East-West trade overall. These shares are determined generally by U.S. foreign trade and export promotion strategies and in particular by credit, tariff, and export control regulations directed at Communist countries.

Figure 1.—East-West Trade and U.S. Share



East = Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, U. S. S. R., and PRC.
 West = Austria, Belgium, Canada, Denmark, West Germany, France, Italy, Japan, Luxembourg, The Netherlands, Norway, Sweden, Switzerland, United Kingdom, and the United States.

SOURCE Selected Trade and Economics Data of the Centrally Planned Economies, U S Department of Commerce, Industry and Trade Administration, Bureau of East-West Trade, 1979

Import Barriers

Eastern exports have elicited strong protectionist sentiment among some American producers, and the tendency has been for commercial import policies to remain restrictive even in the face of stimulative export strategies. In a number of Western countries, the United States among them, both tariffs and quantitative restrictions, and voluntary restraints inhibit the quantities of Eastern goods that are imported. The aim of nontariff barriers is to help the balance of payments and in particular to assist import competitive labor-intensive industries such as woodworking, textiles, and shoe manufacturing. There is now even discussion of extending protection to such technology-intensive products as electronics and chemicals,

in which Western countries enjoy or have enjoyed a comparative advantage.

U.S. action on tariffs—notably the denial of most-favored-nation (MFN) status to most Communist nations—has been politically rather than economically motivated (see chapter VII). It is virtually impossible to link the lack of MFN status directly to existing levels of trade, although it is unlikely that the extension of MFN over recent years would have led to dramatic increases in Eastern imports. As chapter II has pointed out, however, the removal of the political barriers to trade symbolized by the U.S. 'S withholding of MFN status might, over the long run, contribute to more regular and expanded trade relations with the East.

Credit

Chapter VII documents the history of the U.S. restrictions on the amount of subsidized official export credits available to the Communist world. The availability of such financing is often an important factor in the choice of a Western supplier. The curtailed role of the United States in this area can be seen by comparing it to other Western nations (see table 4). The Chase World Information Company has estimated that at the end of 1977 outstanding commitments on export credits extended to Eastern Europe and the U.S.S.R. by Western governments totaled nearly \$32 billion. The U.S.S.R. and Poland, which together are responsible for nearly 60 percent of the Communist bloc's total hard-currency debt, received the bulk of these—\$14.2 billion and \$8.3 billion respectively. West Germany was the greatest lender, providing official credits of \$7.5 billion; France ranked second at \$7 billion, followed by Japan at \$5 billion. The United States, with the activities of the Export-Import Bank (Eximbank) severely curtailed by Congress, ranks fifth, after the United Kingdom, with \$945 million.

This fact may support the contention of some U.S. exporters that the availability of

cheap official credits in other nations puts them at a competitive disadvantage. It also highlights the limited role of the U.S. Government in promoting exports to the East. The impact of such credit policies on U.S. trade cannot be assessed with any precision, but the general effect seems to have far outweighed any positive actions to encourage trade with the Communist world.

U.S. Export Controls

A third important factor in the maintenance of low levels of trade with the Communist world is the restrictions imposed on technology sales. These, as well as the attitudes of U.S. businessmen toward them, are described in detail in chapter VII. There is a widespread perception among businessmen that U.S. export control policies are a significant, if not the most important, barrier to expansion of U.S. trade with the East.

It is impossible to estimate the amount of business lost to American companies because of the stringency or inefficiency of export controls and licensing procedures, but it is probably safe to assume that—the perceptions of some businessmen apart—it is by no means the predominate factor. An as yet unpublished report being prepared by the U.S.

Table 4.—Official Export Credit Commitments to CMEA Countries, as of End-1977
(in millions of U.S. dollars)

	East							
	Bulgaria	Czech.	Germany	Hungary	Poland	Romania	U.S.S.R.	Total
Commitments on signed contracts offered by: ^a								
Austria	\$ 183	\$ 85	\$ 455	\$ 395	\$ 600	36	\$ 260	\$ 2,014
Britain	30	50	45	40	960	100	720	1,945
Canada	0	3	0	0	454	9	173	639
France	540	350	480	110	1,800	390	3,400	7,070
West Germany	140	450	1,200 ^b	65	1,900	430	3,300	7,485
Italy	80	70	530	70	800	200	1,950	3,700
Japan ^c	280	0	400	200	450	500	3,150	4,980
United States	0	0	0	0	408 ^d	74	463	945
Other	265	195	465	95	950	215	750	2,935
Total	\$1,518	\$1,203	\$3,575	\$ 965	\$8,322	\$1,954	\$14,166	\$31,713
Estimated drawings on official credits ^e	798	841	2,455	460	5,775	1,256	10,730	22,315
Undrawn balance	720	362	1,120	515	2,547	698	3,436	9,398

^aRefers to active commitments of official credit. Figures take into account maturing credits and are adjusted for repayments.

^bIntra-German trade swing credits

^cIncludes supplier credits that are provided jointly by Japan's Eximbank and commercial banks

^dIncludes \$220 million in U.S. Eximbank commitments and \$188 million in CCC credits

^eApproximate disbursements.

SOURCE: Adapted from a review of CMEA debt by Miriam Karrin *East-West Markets*, Chase World Information Co., May 15, 1978, p. 3, and May 29, 1978, p. 3.

International Trade Commission (ITC), for instance, investigated cases involving the loss by U.S. firms of 85 separate contracts with the U.S.S.R. between 1972 and 1977. Noncompetitive price was cited by the firms involved more than twice as often as any other reason for the failure. Inability to obtain Government credits, guarantees, and insurance; and competition from firms with a better foothold in the Soviet market were next more frequently mentioned. Export controls and license delays appeared far down the list.

EASTERN POLICIES AFFECTING TRADE VOLUMES

While part of the reason for the low volume of U.S. trade with the East may be attributed to American failure to capture high market shares, decisions on the other side of the Iron Curtain have had greater impact on the nature and extent of East-West commercial relations.

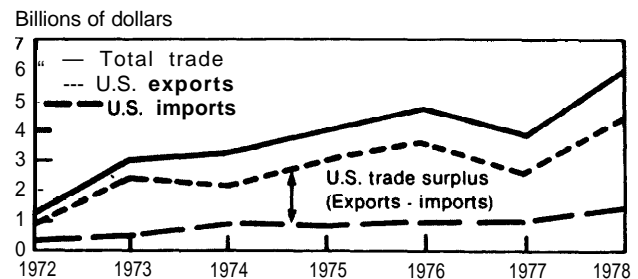
The great majority of Soviet and Eastern European trade is conducted within the Council for Mutual Economic Assistance (CMEA or COMECON). The members of CMEA are the U. S. S. R., Poland, East Germany, Czechoslovakia, Romania, Hungary, Bulgaria, Cuba, Mongolia, North Korea, and Vietnam; associate agreements have been concluded with Yugoslavia and Finland. The CMEA, founded in 1949 as the Soviet response to the Marshall plan, was intended to give the Communist bloc economic as well as political and military cohesion. It provides for the exchange of economic and technical information among Socialist countries, and approximately 70 percent of all Eastern-bloc trade takes place within it. Potential trade with the West is circumscribed by the politically motivated controls imposed on CMEA members. These are both direct and indirect. For example, Eastern European dependency on Soviet raw materials diminishes opportunities for Western raw material exports. Further, Eastern European manufactures are frequently of such design and quality that they can be marketed only in the Soviet Union. The effect of CMEA, together with

the barriers to complete economic interdependence posed by the structural differences between market and nonmarket economies, and the lack of hard currency in the East (discussed below) work against the possibility that East-West trade will ever rise to levels comparable to those between Western nations.

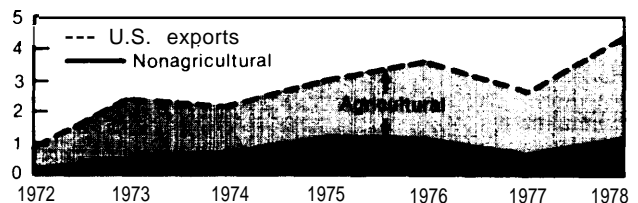
THE GROWTH OF EAST-WEST TRADE

Barriers to increased trade in both the East and the West have eroded steadily since the onset of the era of detente. As figure 2 demonstrates, although absolute

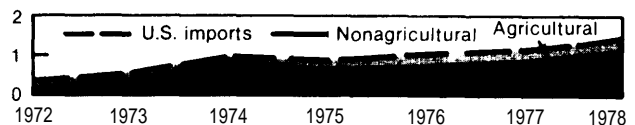
Figure 2.—U.S.-Eastern* Trade, 1972-78**



U.S. exports:
Billions of dollars



U.S. imports:
Billions of dollars



● Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, U. S. S. R., and PRC.

** 1978 trade estimated imports do not include U.S. imports of nonmonetary gold from U.S.S.R.

SOURCE: Selected Trade and Economic Data for the Centrally Planned Economies, U S Department of Commerce, 1979

levels of East-West trade have been small, it has grown rapidly in recent years. Table 5 shows this growth in absolute terms. Table 6 demonstrates the fact that the rate of growth in trade between the industrialized West and the East has consistently outrun world trade as a whole from 1955 to the present. This trend has been particularly manifest in Eastern exports of raw materials and labor-intensive commodities and imports of manufactured goods.

On the Eastern side, an important set of reasons for this growth lies in three interrelated decisions made at some point in the development of each Communist nation. First, the policy of detente involved a political deci-

sion to expand contacts with the West in all fields. An attempt was made to exploit the advantages offered by trade with Western States, but to avoid if possible the social and political liabilities inherent in East-West communication. A second decision involved a shift in development strategy, which required the use of advanced Western capital and techniques to increase productivity in specific sectors. Finally, purchases in the West began to be utilized on a wider basis to compensate for shortfalls in annual plans. This has been especially true for agricultural products and, to some extent, consumer goods. The result has been that increases in Eastern imports from the West have occurred at a greater rate than has expansion of exports.

Table 5.—Trade With the Developed West
(in millions of U.S. dollars)

	1972	1973	1974	1975	1976	1977
Bulgaria						
Exports	\$ 310	\$ 403	\$ 403	\$ 363	\$ 420	\$ 392
Imports	349	480	928	1,204	940	821
Balance.	-39	-77	-525	-841	-520	-429
Czechoslovakia						
Exports	921	1,266	1,639	1,600	1,600	1,698
Imports	1,056	1,513	2,031	2,178	2,178	1,443
Balance.	-135	-247	-392	-578	-578	-245
East Germany						
Exports	1,406	1,915	2,646	2,586	2,850	2,695
Imports	1,929	2,735	3,540	3,630	4,050	2,906
Balance.	-523	-820	-894	-1,044	-1,200	-211
Hungary						
Exports.	739	1,085	1,221	1,096	1,290	1,562
Imports	851	1,135	1,862	1,843	1,860	2,195
Balance.	-112	-50	-641	-747	-570	-633
Poland						
Exports	1,397	2,063	2,865	3,026	3,330	3,495
Imports.	1,772	3,431	5,233	6,076	6,660	4,570
Balance.	-375	-1,368	-2,368	-3,050	-3,330	-1,075
Romania						
Exports	826	1,203	1,402	1,653	1,450	1,682
Imports	1,043	1,451	2,436	2,164	2,150	2,152
Balance.	-217	-248	-534	-511	-200	-470
U.S.S.R.						
Exports	2,570	4,121	6,341	6,750	8,773	10,079
Imports.	3,317	4,957	6,250	10,714	11,653	11,412
Balance.	-747	-836	91	-3,964	-2,880	-1,333
PRC						
Exports	1,085	1,825	2,415	2,620	2,695	2,939
Imports.	1,670	3,525	5,305	5,480	4,110	3,585
Balance.	-585	-1,700	-2,890	-2,860	-1,415	-646

SOURCE UN Trade Data from the U S Department of Commerce, East-West Trade Center, CIA, "PRC-International Trade Handbook," 1976

Table 6.—Average Annual Rates of Change of East-West Trade^a and World Trade by Commodity Category, 1955-76
(percentages computed on the basis of current prices)

Period	Food and beverages	Raw materials	Fuels	Raw material-and labor-intensive manufacturers	Capital- and skill-intensive manufacturers	Total exports
<i>Western exports to the East</i>						
1955 -60....	3.9	8.7	18.3	27.3	20.0	17.0
1960-65	27.2	5.4	30.3	2.4	14.1	11.0
1965 -70....	2.9	1.7	42.5	18.1	13.4	10.9
1970-76	31.0	20.3	16.8	25.7	20.0	26.1
1955 -76....	14.6	9.3	15.4	18.3	18.6	16.5
<i>Eastern exports to the West</i>						
1955 -60....	10.9	9.3	9.7	15.9	11.0	10.5
1960 -65....	6.9	8.6	8.7	18.0	10.7	9.1
1965 -70....	6.5	6.3	10.5	12.3	11.3	12.2
1970 -76....	15.7	27.7	53.8	24.0	25.7	30.2
1955 -76....	10.2	13.3	20.8	17.8	15.0	15.9
<i>World exports</i>						
1955 -60....	4.1	4.2	4.3	7.7	10.0	6.6
1960 -65....	6.8	3.1	7.2	8.5	10.5	7.9
1965-70	5.9	5.9	9.6	11.8	14.0	10.9
1970 -75....	20.4	15.1	41.9	18.7	22.3	22.8
1955 -76., .	9.1	7.0	15.0	11.6	14.1	11.9

^aExcluding Inter-German trade
NOTE Figures are rounded

SOURCES United Nations, *Monthly Bulletin of Statistics*, 1955.76, Organization of Economic Cooperation and Development, *Trade Commodities Country Summaries*, series B (Paris OECD, 1955.76)

THE CONSTRAINTS ON GROWTH OF EAST-WEST TRADE

Some U.S. corporations point to this growing volume of Eastern imports from the West as evidence of the fact that U.S. policies that inhibit trade in general and trade in technology in particular with the Communist world exclude the United States from the economic benefits of lucrative and growing markets. This claim assumes that the patterns and growth rates of recent years will continue. This assumption, however, must be evaluated against the economic forces at work to inhibit the continued growth of East-West trade and to ensure changes in the structure of that trade. By far the greatest of these forces is the chronic shortage in Communist nations of the hard currency with which to pay for imports.

Trade between the nations of the industrialized West is denominated in "hard" or "convertible" currencies, i.e., currencies whose value is determined by market forces

outside the complete control of individual countries. CMEA and the PRC have chosen not to participate in this system. To do otherwise would be to allow outside forces to make de facto decisions with significant impact on domestic economies. Such an alternative is unacceptable to Communist nations which desire to concentrate economic decisionmaking in hands of central planners and which wish to be as insulated as possible from world market forces.

The decision not to have a convertible currency, however, entails drawbacks in trading with the Western nations that accept cash payment only in hard currency. An Eastern country therefore has three choices: it can earn currency by selling to the West; it can arrange countertrade agreements (i.e., transactions in which the seller delivers technology, finished products, and/or machinery and equipment and at the same time, con-

tractually agrees to purchase goods from the buyer equal to an agreed percentage of the original value of the contract); or it can go into debt. The policy decisions that have resulted in expanded overall levels of East-West trade have greatly increased demand for Western goods in the East, but they have not been accompanied by a corresponding growth in demand for Eastern goods in the West. So far, Eastern nations still lag in their capacities to produce salable manufactured goods for export. Moreover, although countertrade is important, it involves complex transactions that Western firms enter into with reluctance. It is the latter choice, therefore, which has most often been made. This means that Eastern nations have had increasingly to be willing to resort to borrowing to finance their trade, and Western nations have had to be willing to supply the necessary credits.

The rapid growth in East-West trade turnover has therefore been accompanied by a rise in Eastern balance of payments deficits. In 1976, this deficit for the Communist world as a whole was \$7.3 billion, and the only country that managed to achieve surplus in trade with the developed West was the U.S.S.R. in 1974, the direct result of the increase in the price of oil in world markets.¹ The paradox of the current chronic Western export surpluses vis-a-vis the East is that, desirable as these balances may be in the near term, they are financed largely through debt and cannot continue indefinitely. The greatest single curb to the continued expansion of East-West trade has become the limitations posed by this debt.

It is important to note, however, that nothing sets the East apart in this connection from other nations, such as less devel-

oped countries (LDCs), plagued with hard-currency shortages. The size and composition of the East's hard-currency debt has become a matter of controversy. Allegations are sometimes made that Communist nations borrow huge and disproportionate amounts from the West, that these sums are virtually "given away" both because they are provided in the form of cheap Government credits and because the debts go unpaid, and that for nonmarket economies, there is no incentive to restrict borrowing. None of these contentions hold up under examination.

THE SIZE OF THE EASTERN DEBT

Estimates of the net amount of Communist debt in the West in 1977 range from between \$37 billion to \$40 billion (U.N. Economic Commission for Europe Secretariat), to \$42 billion, excluding the PRC (Bankers Trust), to \$47 billion to \$58 billion (U.S. Department of Commerce).^{*} This variation is probably due to different methods of accounting. Until 1979, the PRC had not made extensive use of Western credit facilities; its hard-currency debt in 1978 had yet to exceed \$1.6 billion. Table 7 demonstrates the expansion of CMEA debt since 1970.

A recent Department of Commerce study compared the magnitude of CMEA external debt to that of other nations, and found that Eastern debt is relatively small compared with the aggregate external debt of many Western borrowers.³ Table 8 shows Eastern external debt as compared with other States with large loan commitments. Here, Eastern

^{*}In 1977, the debt was distributed as follows:

	% of total hard-currency debt
Bulgaria	5.3
Czechoslovakia	5.3
East Germany	11.9
Hungary	6.7
Poland	25.4
Romania	7.5
U.S.S.R.	31.7
PRC	2.6
CMEA banks.	3.4

³L. Theriot, "Communist Country Hard Currency Debt in Perspective" in Joint Economic Committee, *Issues in East-West Commercial Relations*, 1979.

¹ In 1976, the PRC had a favorable trade balance in total world trade. This was due to its large trade surplus with the less developed countries. Deficits have been partially offset by Eastern revenues from shipping, tourism, and sales of arms and gold, in all of which the East has a positive balance of payments. But the ability of individual countries to utilize this method of financing varies greatly, and only in the case of the U.S.S.R. is it a major means of significantly redressing trade balances.

Table 7.— Estimated Net Hard-Currency Debt of Eastern Europe, U. S. S. R., and CMEA Banks, End of Year, 1970, 1974-77 (in billions of U.S. dollars)

	1970	1974	1975	1976	1977
B u l g a r i a .	\$0.7	\$ 1.2	\$ 1.8	\$ 2.3	\$ 2.7
Czechoslovakia	0.3	1.1	1.5	2.1	2.7
E a s t G e r m a n y	1.0	2.8	3.8	6.0	5.9
H u n g a r y	0.6	1.5	2.1	2.8	3.4
Poland	0.8	3.9	6.9	10.2	13.0
R o m a n i a	1.2	2.6	3.0	3.3	4.0
Total Eastern Europe.	4.6	13.1	19.1	25.7	31.7
U . S . S . R .	1.9	5.0	10.0	14.0	16.0
CMEA banks	0	0.1	0.5	1.1	1.7
G r a n d t o t a l	\$6.5	\$18.2	\$29.6	\$40.8	\$49.4

SOURCE Paul Marer statement in U S Policy Toward Eastern Europe (hearings before the Subcommittee on Europe and the Middle East Committee on International Relations U S House of Representatives 95th Cong 2d sess Sept 7 and 12 1978) (Washington D C U S Government Printing Office 1979) p 100

nations compare favorably to countries with similar gross national product (GNP). Another method for measuring the economic burden of the debt—relating its size to exports (in the Eastern case, hard-currency exports)—is shown in table 8. From this perspective too the Communist world does not

borrow to an excessive degree compared to other nations.

Care must be taken in drawing these kinds of comparisons. First, comparisons of the U.S.S.R. with even the largest developing nations are distorted to the extent that they fail to take into account the size and sophistication of the Soviet economy. Second, in comparing Communist to capitalist nations, the criteria of relative debt size or level of debt servicing must be modified to reflect the points on which State-controlled and market economies differ.⁴ Even with these caveats, however, it is clear that the levels of Eastern debt are by no means alarming or unusual in the context of the world economy.

⁴For instance, Communist nations have no recourse to risk capital (i.e., the sale of stocks). Second, much East-West trade is conducted under "self-liquidating" countertrade agreements, i.e., the creditor accepts as payment the goods produced by the facility for which credit was given. Third, the great legal and social powers of a centrally planned economy give Eastern Governments much greater flexibility in meeting international financial obligations than is possible in the West.

Table 8.— Hard-Currency Debt and Foreign Trade, 1977 of CMEA and Selected Western Countries

Country	Net debt (\$ billions)	Exports (\$ millions)	Imports (\$ millions) 1977	Balance (\$ millions)		Ratio of debt/hard- currency exports	
				1977	1976	1977	1976
B u l g a r i a .	\$ 2.7	\$ 608	\$ 997	\$ -389	\$ -422	4.4	4.7
Cuba	2.2	784	1,565	- 872	- 711	2.8	1.7
Czechoslovakia	2.7	1,903	2,639	- 736	- 758	1.4	1.2
East Germany.	6.0	2,900	4,070	- 1,140	- 1,456	2.1	1.7
Hungary.	3.7	1,712	2,441	- 729	- 474	2.2	2.3
Poland	12.8	3,852	6,374	- 2,522	- 3,235	3.3	3.1
Romania	3.8	2,270	2,660	- 390	- 4	1.4	1.7
U.S.S.R.	11.3	11,666	14,747	- 3,081	- 5,516	0.97	1.4
Vietnam.	0.2	128	434	- 306	- 183	1.6	1.8
Total CM EA.	\$49.6	\$25,823	\$35,927	-\$10,104	-\$12,759	1.9	1.8
<i>Other developing countries</i>							
Argentina	\$.5	\$ 5,800	\$ 4,400	- \$1,400	- \$883	0.84	1.7
Brazil	19.3	12,139	13,229	- 1,090	- 2,200	1.6	2.6
Colombia.	2.6	1,900	2,000	- 100	- 125	1.38	1.4
Mexico.	20.9	4,166	5,489	- 1,323	- 2,732	5.0	6.5
South Korea	8.5	10,047	10,814	- 767	- 1,059	0.84	0.96
Spain	7.0	10,223	17,835	- 7,612	- 8,732	0.7	1.2
Venezuela	4.5	9,487	9,269	+ 218	+ 2,844	0.47	0.3
Yugoslavia	6.5	3,600	7,400	- 3,800	- 2,515	1.8	1.2

SOURCE Lawrence H. Theriot, *Communist Country Hard-Currency Debt in Perspective*, Department of Commerce Project D-66.74

THE COMPOSITION OF THE EASTERN DEBT

There are three major sources of financing available to Communist nations—Western Government financing in the form of guarantees, insurance, and direct credits; regular private commercial credits, including Euro-currency financing; and supplier credits. The mix of these varies among countries. In the U.S.S.R. approximately 60 percent of the gross foreign debt is financed by official credits; Western commercial banks hold 25 percent, and supplier credits constitute the remainder. Eastern Europe, however, relies much more heavily on commercial bank loans, although again the mix varies among individual countries. PRC debt still consists almost exclusively of supplier credits.

It is impossible to generalize about the degree to which the Communist world as a whole relies on "cheap" Government credits and guarantees, but it is clear that the shortage of negotiable currency in the East means that Western official and private credits can

have a significant impact on the growth of East-West trade.

Not all this borrowing is subsidized, however. At year end 1977, Western commercial banks held approximately \$25 billion in net claims on CMEA nations (see table 9). Again, the value of comparison between market and nonmarket economies is limited, but some perspective on this figure may be gained by considering that for the same period non-OPEC LDCs owed Western banks approximately \$30 billion.

Furthermore, the share of CMEA debt in public and private facilities in the United States is relatively modest. As of June 1977, U.S. private bank claims totaled \$4.9 billion or about 10 percent of the net debt of the U.S.S.R. and Eastern Europe. In contrast, U.S. banks hold 41 percent of Brazilian debt and 44 percent of Mexico's. In addition, although U.S. banks hold about 10 percent of CMEA external debt, their claims represent only a relatively small commitment of the total equity capital of the banks. The shares

Table 9.—Estimated Composition of Net Hard-Currency Debt of Eastern Europe, U. S. S. R., and CMEA Banks, Dec. 31, 1977
(in millions of U.S. dollars)

	Drawings on official credits	Supplier credits ^a	Net liabilities to Western banks ^b	Outstanding bonds & notes	IMF and IBRD ^c drawings	Total
Bulgaria	\$ 798	\$ 100	\$ 2,065	\$ 0	\$ 0	\$ 2,963
Czechoslovakia	841	200	884	0	0	1,925
East Germany	2,455	400	3,729 ^c	0	0	6,584
Hungary	460	0	3,630	180	0	4,270
Poland	5,775	1,200	6,890	82	0	13,947
Romania	1,256	200	1,073	0	670	3,199
Total Eastern Europe	\$11,585	\$2,100	\$18,271	\$262	\$670	\$32,888
U. S. S. R.	10,730	2,200	3,411	0	0	16,341
CMEA banks	0	0	3,500	0	0	3,500
Grand total	\$22,315	\$4,300	\$25,182	\$262	\$670	\$52,729

^aIncluding outstanding *a forfait* obligations.

^bBanks in Group of Ten countries, Switzerland, and foreign branches of U.S. banks in the Caribbean and Far East.

^cInternational Bank for Reconstruction and Development

^dExcluding net liabilities of East Germany to banks in West Germany.

SOURCE: *East-West Markets*, May 15, 1978, pp. 3 and 10

of capital accounted for by outstanding loans range from 0.9 percent for Czechoslovakia to 5.6 percent for the U. S. S. R..

THE CREDIT-WORTHINESS OF THE COMMUNIST WORLD

The borrowings of Communist nations are, therefore, not alarmingly large in absolute terms, and the private market's evaluation of the risk entailed in lending to them has been generally favorable. Commercial banks reflect their evaluation of this risk through the terms at which individual Eastern nations are granted loans; i.e., the interest rate spreads between their rates and the London Interbank Borrowing Rate (LIBOR), the risk-free rate utilized in the Eurocurrency market.⁷ The interest spread on commercial loans to the East, therefore, reflects the private market's objective and carefully weighted evaluation of credit worthiness.

Poland, with the highest debt-export ratio of the countries under consideration and the highest interest rate spread, is the least credit-worthy of the Eastern nations. Nevertheless in April 1979, Poland received \$550 million, the largest syndicated loan it had ever obtained in the Euromarket, and the 1¼ point spread over LIBOR was identical to that granted on a similar loan to Egypt. This loan was oversubscribed, a fact interpreted in Warsaw as a relatively positive market evaluation of Poland's credit-worthiness, although there are growing indications that the Poles may be increasingly hard-pressed to begin hard-currency repayments to the West.

A syndicated loan of similar magnitude (\$500 million) was recently granted to the PRC. As might be expected from the very

low debt/export ratio as well as conservative Chinese borrowing practice in the past, the Chinese were granted an extremely low rate—one-half percent over LIBOR. The size and interest spread of this loan indicate a positive evaluation not only of Chinese ability to repay, but also of political stability in the near term.

During 1977, Communist countries arranged for approximately \$3.4 billion in publicized Eurocurrency credits. While considerable, this borrowing accounted for only about 8 percent of total borrowing on the Euromarket during 1977. Borrowing by all Eastern nations in that year was roughly equal to that of Canada, and in general, with the exception of Poland and the CMEA investment bank, Eastern use of the Eurocurrency markets has been relatively modest compared to many developing countries. Furthermore, international bankers have not only been willing to increase the debt, but have rendered relatively favorable interest rate judgments on the Eastern economies.

THE GROWTH OF THE EASTERN DEBT

Discussion thus far has centered on the level of the Communist world's external debt and concluded that its volume and structure are unexceptional in the context of world trade as a whole. This does not mean, however, that this debt can continue to accrue at its present rate.

Between 1974 and 1977, the debts of Bulgaria, Czechoslovakia, East Germany, and Hungary roughly doubled. Growth in Polish and Soviet debts was proportionately even higher, 230 and 220 percent, respectively. Only the debts of Romania and China grew somewhat more slowly (see table 10), but as chapter XI discusses, the hard-currency debt of the PRC can be expected to grow rapidly over the next several years.

In addition to debt incurred by individual nations, CMEA's two international banks, the International Bank for Economic Cooperation and the International Investment

⁷These spreads presently are as follows:

Poland	1 1/4
Romania	3/4
Hungary	5/8
Czechoslovakia	5/8
U.S.S.R.	5/8
PRC	1/2

(LIBOR = 119. for 6 months)

Table 10.—Growth in Debt, Selected Communist Countries, 1974-77

Country	% growth in debt, 1974-77
Bulgaria	125
Czechoslovakia	145
East Germany	115
Hungary	150
Poland	230
Romania	48
U.S.S.R.	220
PRC	30

SOURCE: Office of Technology Assessment

Bank, have been active borrowers in Western private credit facilities. The Eurocurrency obligations of these two banks rose from \$100 million in 1974 to \$1.7 billion in 1977.⁶

These enormous growth rates reflect the expansion of East-West trade. But while additional loan capital seems to be available in varying degrees to all the Eastern nations, in the long run continued growth of East-West trade cannot be financed through borrowing, even should the East wish to do so. According to Department of Commerce estimates, East European nations would have to sustain growth rates of between 6 and 9 percent and cut import growth to zero to stabilize their debt levels by 1985.⁷ As both these possibilities are highly unlikely, all other things being equal, the accumulation of debt will probably increase. If this happens, the financial risk component of interest rate spreads on East European loans will increase until borrowing becomes uneconomical.

ALTERNATIVES TO BORROWING

Should further borrowing become prohibitively expensive to the East or should Western lending be restricted for noneconomic reasons, three alternatives are open to the

⁶Morris Bornstein, "Issues in East-West Economic Relations," unpublished paper for Research Conference in East-West Relations in the Eighties, Rockefeller Foundation Study and Conference Center, Bellagio, Italy, 1979.

⁷Allen Lenz, "Potential Hard-Currency Debt of the U.S.S.R. and East Europe Under Selected Hypotheses" in Joint Economic Committee, *op. cit.*

centrally planned economies. They can allow more direct Western involvement in their enterprises; they can resort to internal financing; or they can expand and diversify their hard-currency earnings from exports.

Western Involvement in Eastern Enterprises

There are at least two ways of increasing Western involvement. A country can obtain risk capital by establishing joint enterprises which enable foreign firms to invest directly in its economy. Such entities are permitted in Hungary, Romania and, to a lesser extent, in Poland. In the PRC the possibility is under discussion. The current contribution of these enterprises is small, however. Alternatively, greater use may be made of leasing, although the existence of foreign-owned property in a Socialist country raises ideological problems. This has not prevented the Soviets from leasing containers from the West, but there are no prospects for rapid or widespread basic policy changes in this regard.

Internal Financing

Internal financing requires the allocation of a larger share of the national income to investments. Because standards of living inevitably suffer as a result of this tactic, it is subject to political constraints. Poland, for example, has found it extremely difficult to raise internal consumer prices without immediate and violent reaction from the populace. While this is an extreme example, the increases in savings necessitated by internal financing make this alternative unattractive.

Increased Exports to the West

Given the limitations inherent in both these approaches, it seems inevitable that the hard currency necessary to finance trade and economic growth in the Communist world over the long term can be obtained in sufficient quantities only through the sale of goods in the industrialized West and the LDCs. Western imports must ultimately be

paid for through Eastern exports, and presumably through the reduction or elimination of present Western trade surpluses with the Communist nations. The Western technology sold to the East will help to accomplish this to the extent that it is aimed at capacity expansion or long-term productivity increases in potential export sectors.

Undoubtedly, the attempts of many Communist nations to transform themselves into net exporters of manufactured goods have already been aided by technology imported from the West, much of which is specifically directed into export industries. At the same time that Eastern markets for technology-intensive goods have been expanding, Eastern exports to the West have become increasingly capital intensive. Structural changes in Eastern exports in favor of capital-intensive products do not, however, adequately reflect the progress in industrialization or capital accumulation and technological expertise which has been achieved by Eastern countries. In particular, relative to the level of economic development in the East, too few technologically advanced and sophisticated capital-intensive products of too low a quality are produced for sale to Western countries. This is largely due to the nonmarket economies' inherent systemic difficulty in developing products suitable to Western demands and effectively marketing them. Comparisons of Eastern export development to that of Japan, Taiwan, or Korea are therefore invalid.

CONCLUSIONS

In the last analysis, deliberate policies in both the East and West may be hostage to larger economic conditions. CMEA behavior during the 1974-75 recession provides an example of the problems many planned economies have experienced in controlling their trade balances with the West. Except in the U. S. S. R., which is the sole oil exporter in CMEA, growth in East-West trade and resulting trade imbalances became a particularly acute problem to CMEA members after 1974, when the slow pace of world economic

recovery hindered the growth of Eastern export earnings at a time of greatly expanded imports of food and other items. In Eastern Europe, restrictive action directed at import-elastic sectors such as industrial investment was instituted. As a result, industrial expansion in the region declined from 8 to 8.5 percent in 1974, to 5.5 percent in 1978. This decline in the growth rate of domestic output seems to have affected the expansion of exports more strongly than that of imports, with the result of a further widening of the deficit in 1978. In other words, attempts to reduce the deficit indirectly have only increased it.

In contrast, when the PRC was faced with lagging demand for its goods in Western markets in 1975, it simply slashed its agricultural imports by \$1 billion. Its ability to take such incisive action was predicated on the low absolute value of its trade with the West and its consequent lack of dependence on Western imports, a situation which, at least in some sectors, no longer exists in many CMEA countries.

It may be, therefore, that world energy prices and Western economic growth levels (and their effect on import demand) ultimately have as much direct and indirect impact on the level of East-West trade as any policy decisions taken in either East or West.

In any case, it is clear that U.S. (and other Western States') willingness and ability to purchase more Eastern exports are vital conditions for the long-term expansion of East-West trade. How large could this trade ultimately grow? One optimistic assessment has been made by Michael Forrestal, President of the U.S.-U.S.S.R. Trade and Economic Council, who estimated recently that "over a relatively tranquil five-year period ahead with no remedial U.S. tariff or credit legislation, U.S.-U.S.S.R. trade could reach 20 billion; 15 billion in U.S. exports and 5 billion in Russian sales to the U.S. If tariff and credit limitations were removed, the total would be substantially higher."⁸

⁸*Industry Week*, Mar. 5, 1979.

While significantly expanded East-West trade rates may be possible in the long run, Forrestal's estimates are spectacularly optimistic for the near future. Given the size and diversity of its economy, the U.S.S.R. retains an extremely low level of foreign imports per dollar of gross domestic product, and there is no reason to expect this policy to change in the near future. Moreover, Soviet imports from the United States could increase fivefold and still be only \$7 billion to \$10 billion annually. And these figures fail to take into account the limitations posed by

present Eastern export potential and the limitations of demand for Eastern exports in the West. Nor do they allow for the fact that the United States has never captured a large fraction of Eastern markets. Large increases in East-West trade as a whole would benefit other Western countries proportionally more, especially in the absence of vigorous U.S. export promotion campaigns, favorable financing terms, relaxation of export controls, and other policies aimed at foreign trade expansion in general.

THE ROLE OF TECHNOLOGY IN EAST-WEST TRADE

FUTURE PROSPECTS

Trade in technology has remained a relatively stable and relatively small component of East-West trade as a whole. There is reason to believe, however, that Eastern imports of technology may rise, and that this will occur regardless of whether East-West trade expands or whether world economic conditions, U.S. commercial or political policies, or the pressure of increasing hard-currency debt cause it to stagnate or contract. Indeed, the very structure of East-West trade is creating a situation in which Eastern importers will have higher incentives to acquire foreign technology.

In the future, the Communist world is likely to place a greater emphasis on obtaining technology than on pure capital inflows.⁹ Presently technology-intensive products constitute only a minor share of the total resource inflows from the West. These, however, have a disproportionate importance to the economies of the Eastern nations (see chapters X and XI). This is not only because of the need to expand exporting sectors of the economy, but also because the increase in productivity resulting from the use of the

new technology usually more than offsets the cost of the credit needed to obtain it. So long as this remains the case, Eastern nations will be increasingly eager to borrow in order to purchase Western technology. By the same token, if as Eastern debt continues to grow, interest rate spreads increase, other types of imports will become even less economical; high-productivity technology imports will thus begin to constitute a larger relative share of Eastern imports. This suggests caution in concluding that debt constraint will inhibit technology purchases. On the contrary, it may create incentives for purchasing more technology at the expense of other imports. Demand for technologically intensive products in Communist nations is, therefore, unlikely to abate in the future. In the absence of foreign production and marketing know-how, however, long-term ability to market usable products cannot be created without major structural changes that such countries are unwilling to make. The demand for Western management technology is therefore expected to grow enormously. The medium-term result of this is that Western technology-intensive industries and firms providing management expertise will benefit most from expanded East-West trade over the next several years, while import-sensitive capital and labor-intensive industries may be injured by increased competition.

⁹Padma Desai, "The Productivity of Foreign Resource Inflows to the Soviet Economy," in *American Economic Review*, LXII (2), p. 74.

PRESENT U.S. MARKET SHARES

The implications of this for the U.S. economy must be understood in the context of the U.S. share in Eastern technology purchases. This is impossible to determine with any precision. A rough picture of the value of U. S., sales of technology to the East relative to those of America's major Western trading partners may be constructed, but this is possible only through categories of technology transfer for which data exists—trade in high-technology products and industrial cooperation agreements (see chapter VI).

Sales of High-Technology Products

As table 11 demonstrates, in 1977 U.S. aggregate sales of high-technology products to the U. S. S. R., Eastern Europe, and the PRC amounted to less than \$300 million, and in no case did these products constitute a major share of U.S. exports to individual Communist countries. High-technology sales

thus ranged from a high of 19.7 percent of U.S. exports to Bulgaria to 3.3 percent of total exports to East Germany.

Nor is the United States a leading source of high-technology products among Western sellers. In the case of the U. S. S. R., West Germany is by far the largest single exporter of high-technology products, followed by Japan and France. In 1977 those three countries accounted for more than 62 percent of total Soviet imports of such items from the West. The U.S. share in high-technology products in that year amounted to only 9.1 percent. Nearly a third of Western high-technology exports to the PRC originate in Japan. West Germany and France account for another 29 percent, and the United States ranked fifth in this category with a 6-percent share.

Table 11 has also demonstrated that Eastern purchases of high technology from the United States have, if anything, occurred at a slightly lower rate than purchases from the

Table 11.—Comparison of High-Technology Exports With Manufactured Goods and Total Exports—
15 Industrialized World (I. W.) Countries to the Communist Countries and to the World
(in millions of U.S. dollars)

Destination	1977		1976		1974		1972	
	High-tech. exports as % of		High-tech. exports as % of		High-tech. exports as % of		High-tech. export as % of	
U.S.S.R.								
High-technology I.W. exports.	\$ 2,003	—	\$ 1,627	—	\$ 1,036	—	\$ 582	—
Manufactured goods I.W. exports . . .	9,537	21.0	9,169	17.7	5,546	18.7	2,430	24.0
Total I.W. exports.	11,412	17.6	11,653	14.0	6,250	16.6	3,317	17.5
Eastern Europe								
High-technology I.W. exports.	1,741	—	1,525	—	1,223	—	619	—
Manufactured goods I.W. exports . . .	11,769	14.8	11,438	13.3	10,432	11.7	4,738	13.1
Total I.W. exports.	12,866	13.5	12,757	12.0	11,322	10.8	5,098	12.1
PRC								
High-technology I.W. exports.	248	—	342	—	410	—	64	—
Manufactured goods I.W. exports . . .	2,986	8.3	3,094	11.1	3,166	13.1	1,090	5.9
Total I.W. exports.	3,585	6.9	3,423	10.0	4,369	9.5	1,445	4.4
Total all Communist countries								
High-technology I.W. exports.	4,886	—	4,140	—	3,197	—	1,562	—
Manufactured goods I.W. exports . . .	29,991	16.3	27,955	14.8	23,714	13.5	10,266	15.2
Total I.W. exports.	34,263	14.3	32,808	12.6	27,261	11.7	12,234	12.8
World								
High-technology I.W. exports.	71,576	—	64,366	—	49,314	—	29,092	—
Manufactured goods I.W. exports . . .	523,890	13.7	459,351	14.0	381,983	12.9	214,182	13.6
Total I.W. exports.	669,393	10.7	590,833	10.9	498,470	9.9	273,045	10.7

SOURCE Quantification of Western Exports of High Technology Products to Communist Countries, prepared by John Young, Industry and Trade Administration, Off Ice of East-West Policy and Planning, U S Department of Commerce, Project No D-41.

industrialized world as a whole. In 1977, the fraction of high-technology, as a percentage of total Soviet imports from the United States was 11.3 percent as opposed to 17.6 percent for the total industrialized world. The comparable figures for Eastern Europe were 10.6 percent for the United States versus 13.5 percent for the industrialized world. Only in the PRC did America garner a higher than world share of high-technology sales—8.8 percent as opposed to 6.9 percent.

As is evident in table 12, Communist world (including Yugoslavia and Cuba) shares of total high-technology exports from the United States are slightly higher than overall world averages (14.3 versus 10.7 percent). Of the Eastern countries, the U.S.S.R. purchased the highest proportion of high technology (17.6 percent). In the cases of both the U.S.S.R. and Eastern Europe, however, these shares have not risen notably over the past 5 years, despite large increases in the total volume of East-West trade.

Industrial Cooperation Agreements

The paucity of information available on the value of coproduction agreements, licenses and patents, and turnkey ventures can be seen from a brief survey of the best existing data. In 1975, U.S. firms participated in 424 agreements. Nearly four-fifths of these (79.3 percent) were in the manufacturing sector. Within this sector machine building and chemicals predominated, each with approximately one-fifth of total agreements. Electrical machinery and petroleum processing industries were also important. The U.S.S.R. and Poland signed the largest number of agreements with U.S. firms.

Care must be taken in interpreting this information however. Although the U.S.S.R. ranks third, after Hungary and Poland, in the number of substantive arguments concluded, it has been estimated that the total value of the Soviet agreements exceeds that of all Eastern European cooperation agreements combined.¹⁰ Thus, the number of

¹⁰Paul Marer and Joseph C. Miller, "U.S. Participation in East-West Industrial Cooperation Agreements," *Journal of International Business Studies*, fall-winter 1977, p. 21.

Table 12.—U.S. High-Technology Exports to the Communist Countries and to the World, 1977

Exports to:	Millions of dollars	High tech. as % of
Bulgaria		
High technology.	\$ 4.7	—
Manufactured.	20.1	23.4
Total exports	23.9	19.7
Czechoslovakia		
High technology.	7.1	—
Manufactured.	18.4	38.5
Total exports	74.0	9.6
East Germany		
High technology.	1.2	—
Manufactured.	4.1	29.1
Total exports	36.1	3.3
Hungary		
High technology.	12.9	—
Manufactured.	44.8	28.7
Total exports	79.7	16.2
Poland		
High technology.	37.0	—
Manufactured.	114.2	32.4
Total exports	436.5	8.5
Romania		
High technology.	23.6	—
Manufactured.	61.0	38.6
Total exports	259.4	9.1
Total Eastern Europe		
High technology.	86.5	—
Manufactured.	262.6	32.9
Total exports	909.6	9.5
U.S.S.R.		
High technology.	182.7	—
Manufactured.	547.4	33.4
Total exports	1,623.5	11.3
Total Eastern Europe & U.S.S.R.		
High technology.	269.2	—
Manufactured.	810.0	33.2
Total exports	<u>2,533.1</u>	10.6
PRC		
High technology.	15.1	—
Manufactured.	86.9	17.4
Total exports	171.3	8.8

SOURCE: Quantification of Western Exports of High Technology Products to Communist Countries, prepared by John Young, Industry and Trade Administration, Office of East-West Policy and Planning, U S Department of Commerce, Project No D-41

agreements tells nothing of their magnitude or technological significance. Unfortunately, no comprehensive data exists to fill these gaps. This is a reflection not simply of the complexity of the deals, many of which involve other countries as well as U.S. foreign subsidiaries, but also of the reluctance of firms to divulge details of their transactions. There is at present, therefore, no way of accurately estimating the amount earned by U.S. firms in cooperation agreements.

The little information that is available for the United States is in data for the value of license and patent sales collected by the Department of Commerce. Unfortunately, this is presented in a form that makes interpretation difficult. Although for the past 3 years, the General Accounting Office has suggested that the Department of Commerce disaggregate this data, Commerce continues to report only cumulative revenues from royalties, not payments collected annually.

Among Western countries, West Germany is the leading licensor to the East. It is followed by the United Kingdom, the United States, France, Japan, Italy, Sweden, Switzerland, the Netherlands, and Belgium. But while certainly a common mode of technology transfer, licensing is by no means a major money-earner for any nation. While the number of transactions involving the sale of licenses by Western firms is not accurately known, a 1976 estimate placed the figure at less than 2,400. Again, this in itself is deceptive. The U.S.S.R. has sold more licenses to the West than it has bought, but the price paid for Western licenses has been estimated by Licensintorg, the Soviet licensing agency, as an average of 10 times greater than the price paid by Western firms for Soviet licenses. It has been estimated that in the mid-1970's annual proceeds in the West from Eastern license purchases were in the order of \$300 million. Much of this, however, was paid for in the goods produced by the license under countertrade agreements. There is no official estimate of the share of this revenue accruing to the United States—in cash or in goods.

Moreover, although there are persistent rumors about patent infringements by the Soviet Union, no reliable estimates exist on the magnitude of this problem. A recent study by the National Research Council reported that "conversations with several experts on international patent law have led the panel to believe that Western companies tend not to take legal action even when they believe their rights have been infringed upon

by the U.S.S.R. simply because 'it is too great a hassle.' ¹¹

Conclusions

The only reliable information for measuring the value of U.S. technology sales to the East is in data for high-technology product exports. Even this must be treated with extreme caution since many subjective judgments are made in preparing quantitative estimates. The information is valuable primarily for indicating changes in overall trade volumes and for making crude estimates of rates of change. The gross outcome of this analysis suggests that U.S. trade in technology and technology-related products with the East is relatively small (less than \$300 million in 1977) and has been growing at roughly the same rate as overall East-West trade. The data does not clearly support the thesis that the nonmarket nations have made a concerted effort to extract technologies from the United States on a massive scale to support economic or military interests. Nor can it be taken as a certain rebuttal of the thesis. The Soviet Union and Eastern Europe did import relatively more technology as a fraction of total imports than the world average, but the PRC imported considerably less. The differences may be due primarily to relative degrees of industrial development and deliberate Chinese policy which, as chapter XI demonstrates, is changing. Beyond this, it is safe to conclude that sales of technology constitute only a small fraction of U.S. trade with the Communist world, trade which itself has been very circumscribed. If, as is likely, technology purchases from the West accelerate, U.S. policies designed to capture larger market shares would be necessary for American firms to benefit as much as would firms in allied nations.

¹¹National Academy of Sciences, "Review of U.S.-U.S.S.R. Interacademy Exchange and Relations," National Research Council, May 1977.

THE IMPACT OF TRADE WITH AND TECHNOLOGY SALES TO THE EAST ON THE U.S. ECONOMY

Any evaluation of the merits of expanding U.S. trade as a whole or trade in technology with the Communist world must take into account the net effects of such trade on the U.S. economy. Many attempts have been made to approach this conceptually complex question, but qualitative generalizations have addressed themselves to relatively narrow segments of the issue. Satisfactory quantitative assessments, except for single sectors or commodities, simply do not exist. The reasons for this paucity of analysis are manifest. Technology is notoriously difficult to measure empirically, either for particular commodities or through macromodels of entire economies. At present, for instance, there is no universally accepted model for assessment of aggregate technical change in the U.S. economy. Furthermore, any satisfactory model of the macroeconomic effects of technology transfer in the United States would entail an accurate assessment of technology not only as a factor in U.S. growth, but in the nonmarket and third-country economies as well. This is not only beyond current capabilities; it is unlikely that a sufficient data base for such an attempt will ever be assembled. In light of this, assessment of the impact of East-West technology transfer on the U.S. economy must be limited to narrowly defined generalizations.

In the United States, those with a stake in commercial technology transfer to nonmarket economies may be divided into four categories: the vendors of U.S. technology; industries that must compete with Communist exports both in the United States and in third markets; purchasers of Eastern technology; and the U.S. consumer. Policymakers must aggregate and balance the interests of all four.

TECHNOLOGY VENDORS: U.S. CORPORATE STRATEGY

The primary motive for American firms' sales of technology to the East is profit. Export income is generated by the sale of "high-technology" commodities and know-how, and also by the sale of associated plant, equipment, and services. In addition, indirect results of the transfer transaction may bear fruit in the medium or long term in the form of future sales. Highway construction equipment, for example, may be purchased in the future as a result of the transfer of automotive manufacturing technology.

Gains to individual firms obviously increase the aggregate income of the United States as a whole. Moreover, sales resulting from growing demands for exports lead to increased employment, not only in research, design, and engineering services directly associated with technology sales, but in associated industries which benefit from the derived demand. In addition, there is an important sense in which overall trade levels, analyses of numbers of plants and licenses, or of the revenues received from these sales, may not provide a useful estimate of the full role of technology sales to the East in international commerce. In most cases, technology transfers are only a part of complex transactions which include barter, two-way technology transfers, coproduction agreements, buy-back agreements, and other arrangements often involving third countries. The participation of a U.S. firm in such relationships can become an integral part of its corporate strategy and therefore assumes an importance disproportionate to the dollar value of the transactions.

Companies engaged in East-West trade, therefore, often contend that its value to U.S. corporations cannot be measured solely by its present volume or profitability. The continued ability to compete in the sale of technology to the East is important to a variety of other corporate activities. OTA sought to explore this argument by conducting interviews with high officials in 10 firms,¹² all of which have clearly articulated positions on the importance of trade with Communist nations to their corporate strategy. No attempt was made to assemble a representative or statistically relevant sample, and the following discussion should therefore be regarded merely as an attempt to synthesize as a cohesive argument the views of an identifiable segment of U.S. industry. Interviewees by no means agreed on every point, but the case presented here is faithful to the opinions of many of those interested in fostering trade with East.

U.S. firms seem rarely to enter Communist markets as part of a deliberate global strategy. More often their initial involvement is the result of an isolated opportunity which comes about either as the result of other international activities, or of approaches by representatives from the East. In some cases, however, the contacts developed in an initial venture result in the establishment of closer forms of cooperation with the Eastern nation.

Control Data Corporation (CDC) provides a good example of the way in which such an opportunity can grow into a larger relationship. In 1968 it sold a CDC 1604 computer to the Soviets. This model was being phased out in the United States; nor did it represent

a major technological innovation for the Soviets. The sale resulted in additional contacts which led CDC to evaluate the Soviet market potential and eventually resulted in a protocol agreement between the company and the Soviet State Committee on Science and Technology. CDC is now actively involved in marketing products and technology in the U.S.S.R.

Once an initial transaction is successful and longer term contacts are established, U.S. firms evaluate their involvement in the East in the context of their worldwide activities, and begin to examine broader forms of cooperation, e.g., coproduction agreements. This sequence of events is not unique to dealings with the Communist world. Early transactions generally have little or no impact on corporate strategy. Similarly, the complexity of the issues associated with closer cooperative relationships necessitates a building of trust that may only be obtained through extended personal or corporate contact. But as the involvement in the East increases, there is a tendency to consider these markets as a concrete part of the new product planning and development process.

The development and introduction of new products is a large, complex, and costly process. Because initial activities in the Communist world are usually based on exploitation of isolated opportunities, there is no indication that companies explicitly consider these markets in their early new product decisions. This situation may now be changing, and some large firms consider Eastern markets in the evaluation of worldwide market potential for new products. This tendency is particularly marked in companies with coproduction and joint venture agreements with Eastern-bloc partners. Movement towards explicit consideration of the Communist world market potential appears to be less a reflection of corporate philosophy than

¹²The firms included an international chemicals company and an international consumer industrial manufacturer (both of which declined to be identified); Control Data Corporation; Corning Glass Works, Inc; Hewlett-Packard Corporation; International Harvester; Herman Corporation; Levi-Strauss; Texas Instruments; and Satra Corporation.

of the broadened geographical perspective of corporate decisionmakers.

Those executives who argue that East-West transactions are part of new product decisions also contend that increases in this trade will stimulate the U.S. economy by increasing innovation, creating new jobs, and improving productivity.

Other firms contend that, for the first time, they are considering Eastern market potential as part of the R&D justification on new product technology because East-West trade is now sufficiently institutionalized to become part of the global marketing plan. This may include ongoing discussions with Eastern trading companies which involve cooperation in design, development, testing, and production of new product models.

The past profitability of East-West transactions has been mixed. Some companies openly admit that business with the Communist world has not been as profitable as was originally expected. In fact, although no firm would provide concrete examples, several stated that in retrospect their expectations had been unrealistic. Throughout history examples abound of companies' continuing to fail to realize profits in their dealings with the Communist world. This is particularly true of the Soviet Union, where it is almost impossible to document cases of American corporations' showing direct profits. Despite this disappointing record, many firms continue to believe that it simply takes time before profits begin to accrue from trade with the East. There are several reasons for this:

- It takes time to develop enough insight into centrally planned economies, their institutions, and people, to know what business opportunities are possible and where to look for them.
- The authorization and security procedures within such countries are rigid and complex. It may take many years before a firm's counterparts in the East feel secure enough to propose meaningful deals.

- The difficulty in getting access to end users and to research institutions makes it difficult to collect the information often essential to transactions.

It may be that some companies are not getting an adequate return because they are not working hard at developing closer relationships in the East. Those most willing to discuss complex joint ventures are the most likely to identify meaningful areas for future transactions. Moreover, some returns in East-West trade do not involve direct profits, but rather may involve the acquisition of design, engineering, and technical development capabilities of Eastern counterparts.

A firm may also benefit from the sale of technology that is no longer competitive in Western markets, but is appropriate to Eastern technical sophistication. This is a way of partially recouping R&D costs, and is likely to be a factor in industries with a particularly high rate of technical innovation (e.g., computers or integrated circuits).

At the same time, however, U.S. firms have made very extensive investments in the East. Anecdotes of negotiations that have taken place over several years, costing millions of dollars, abound. To these costs must be added those of participation in activities viewed as necessary to the development of successful East-West ventures—e.g., membership in trade councils or maintaining foreign offices. These expenses are of sufficient magnitude to warrant continued efforts, even in the absence of short-run profits. They represent a vested interest in the health and continuity of East-West commercial relations.

Perhaps most importantly U.S. companies fear that difficulties in dealing with the Communist world will have the long-run effect of shutting them out of other markets. World trade relationships have implications that go far beyond the contact between two companies. Often transactions are initiated because they meet the needs of worldwide marketing strategies. For example, a U.S. company may enter into a coproduction agree-

ment with an Eastern European counterpart to produce products that are no longer cost-effective within the United States, but which can be sold in LDCs as part of the company's larger strategy.

As a company's experience and expertise in foreign commercial relations increase, it begins to evaluate the role of these relations in terms of global market needs. Any relationship with an individual country tends, therefore, to be regarded as a potential lead to new markets. In this area, involvement with some Eastern European countries is viewed as an entree elsewhere. Two quotations from OTA's interviews with selected businessmen indicate this:

We started negotiating with the Chinese in their Embassy in Bucharest many years before there were serious thoughts about regularizing relations with the PRC.

We have been contacted by trade representatives from one of the Eastern European countries regarding the possibility of joint ventures to address the needs of LDCs, particularly Africa. We are actively following up on these possibilities since they are a logical extension of our total marketing interests.

Thus, both China and Eastern Europe are looked towards for potential assistance in dealing with third countries. Trade with China is seen by some firms as an entree into parts of the Far East. Similarly, Eastern European ventures can become part of a strategy to address markets throughout the CMEA, in Western Europe, and in LDCs.

Because of these interrelationships, there are fears that the diminution of East-West trade will have effects beyond immediate bilateral relationships, including isolation from other markets. The problem is exacerbated by the prevalence of barter and countertrade in East-West transactions. This form of trade is often new to American firms, but once involved, the need to market the items purchased in the transaction perforce involves breaking into new markets.

In sum, it would appear that both direct and indirect benefits accrue to those export-oriented industries that engage in technology transfer. Moreover, some of these benefits can be diffused throughout the economy, although it is usually impossible to disaggregate the effects of technology transfers from other sales. However, there can be negative effects stemming from such transfers, and policymakers must decide whether individual firms can be depended on to prevent transactions in which long-run harmful effects will make themselves felt in their own industries. There is some evidence, for example, that U.S. firms are encountering increasing difficulties in adjusting to technical change and are considering the marketing of their technology as an alternative to aggressively engineering for competitive production in the high-wage U.S. economy.¹³ The nonmarket economies encourage this trend through providing a market for technology no longer competitive in the West. While such transactions may indeed improve the cash flow of an individual firm, the long-term effects on an entire industry can be devastating.

Further, the proliferation of industrial technology in the Socialist economies may be weakening the bargaining position of U.S. firms as suppliers of technology to newly industrializing nations. At present, U.S. firms reap the greatest return on technology through sales to LDCs. Communist nations are attempting to break into this market, notably in order to procure raw materials. When the long-term interests of a given industry are considered, the immediate short-term gains resulting from the sale of industrial technology may be more than offset both by the possibilities of future inability to compete in Western markets, and by increased competition in technology sales in third world markets.

¹³Jack Baranson, *International Transfers of Industrial Technology by U.S. Firms and Their Implications for the U.S. Economy*, U.S. Department of Labor, 1976, p. 35.

IMPORT COMPETITIVE INDUSTRIES

The negative effects of technology transfer rebound most acutely in the second major group interested in the process—those industries that compete with Communist exports both in domestic and foreign markets. Owing to the centrally planned economies' desire to increase their exports, their technology purchases are often in export oriented sectors. Indeed, compensation agreements by their very nature involve U.S. imports of the commodity produced as a result of the technology transfer transaction; other types of countertrade involve Eastern exports of unrelated goods which may also affect U.S. markets.

The negative effects of Communist imports as a whole are rare but relatively easy to document. Victims of Eastern imports may initiate import restraint petitions with the ITC charging market disruption. Problems arise however in connecting specific exports of technology not only to export capability in the same sectors in the East, but also in identifying sectors which may become problems in the future.

One clear example of a U.S. transfer of technology to the East that resulted in a direct and significant increase in imports occurred in 1976, when a U.S. firm signed a \$3.2 million contract with Hungary for the sale of equipment, designs, and know-how to manufacture women's shoes. The direct result of this transaction was a fivefold increase in Hungarian shoe exports to the United States between 1977 and 1978. In 1978, women's footwear became the largest single Hungarian export to the United States, and the value of U.S. imports in that year alone was nearly double the value of the original contract. It is relatively unusual, however, for cases of this kind to occur in the consumer goods sector.

There are sectors of the economy that are more vulnerable to the repercussions of technology transfer. Perhaps the most important of these is the chemical industry. In April

1973, Occidental Petroleum Corporation agreed to purchase from the U.S.S.R. 33.3 million metric tons of ammonia and 18.5 million metric tons of urea, most to be marketed in the United States. The Soviets in return agreed to make comparable purchases of U.S. goods, including 18.5 million tons of superphosphoric acid. The deal also involved the construction of several ammonia plants in the Togliatti area of the U. S. S. R., although the technology transfer involved in these plant sales was handled largely by another U.S. firm, Chemica.

In 1977, the U.S.S.R. exported no ammonia to the United States. As a result of this single transaction, 1 year later the Soviet Union became this country's second largest foreign supplier. Meanwhile, over the last 2 years the United States has experienced domestic plant closures and significant declines in ammonia prices. The U.S.-U.S.S.R. contract has a life of 20 years and ITC has already judged that it has led to serious disruption in the domestic anhydrous ammonia market.

Other problems in the same industry have arisen in Western Europe. After a crash program of expansion in the chemical industry greatly aided by technology sales by Western European firms, CMEA production in plastics, ammonia, fertilizers, urea, and soda ash has more than doubled since 1970. Now CMEA's growing self-sufficiency in chemicals has eroded one of the West European chemical industry's largest export markets. In 1975, CMEA purchases from Western firms amounted to over \$2.5 billion; since then they have declined to less than \$2 billion. In addition to the loss of export markets, CMEA producers have begun to challenge West European firms in their own markets for the sale of many petrochemicals and plastics. In 1976, CMEA accounted for 20 percent of world production of basic chemicals, compared with Western Europe's 30 percent and 25 percent for the United States. Forecasts predict that CMEA will overtake the U.S. share by 1986.

The major West European chemical firms are thus experiencing the results of a boom in technology sales to CMEA for which they negotiated countertrade deals and accepted payment in kind. So long as this payment was largely in the form of raw materials, there was little problem in utilizing it profitably. CMEA payments in intermediate chemical products were also welcomed. Some firms, in fact, came to rely on CMEA for quantities of bulk chemicals that they could not themselves supply without expensive capacity additions. Now, however, not only are compensation agreements becoming more common, they are involving more sophisticated chemicals. Once these are sold to user industries or placed in the spot market in Rotterdam, the Western companies lose control of the market. By now it may be impossible for chemical companies to stop this flow. Most large European producers are committed to long-term compensation arrangements, deals that proliferated because of a depressed market for chemical plants in the West.

Despite the growing menace to the West European chemical industry, existing legal mechanisms have not been able to deal with the glut effectively. Chemical firms also find it difficult to prove dumping under European Economic Community (EEC) procedures, where (as in the United States) relevant criteria are the exporter's prices in the home market or actual costs. CMEA prices are administered and are therefore unusable for price comparisons. Moreover, it usually takes Western firms at least a year to assemble a case based on internal CMEA costs. By this time the damage has already been done.

The case of chemicals illustrates the development of a novel export strategy in those nonmarket States whose exports have been largely composed of primary products. This strategy is to increase the degree of fabrication of primary exports in order to gain hard currency from the increased value added. This is a particularly attractive option because the resulting semifabricate can also be used in domestic industry, thus eliminating

the danger of excess supply in times of lagging world demand.

This strategy is now being used in the PRC. In 1974, an American firm, SOHIO, licensed a process to the PRC for producing acrylonitrile, a chemical used in acrylic fibers. This process was to be used to produce 50,000 metric tons annually. Engineering and construction services were provided by two Japanese firms. The synthetic fiber produced in this scheme could be absorbed by the domestic market in the PRC. It is possible, however, that the Chinese may choose to export and use this product as a major foreign exchange earner. Already, synthetic fabric from China is being sold to Hong Kong and Macao where it is made into clothing and then exported to the United States under a favorable (MFN) tariff structure. While in the near future it is unlikely that China's production of synthetic fibers will compete directly in the U.S. market against domestic producers, the PRC is already breaking into U.S. export markets in the Far East.

The market disruption caused by technology transfer in the chemical industry is clear, as is the lesson it provides for the United States. But this case may not be generalizable to other industries. The chemical market is more open to CMEA assaults than other sectors because purchase decisions on chemical suppliers are made almost entirely on the basis of price. Soviet ammonia, in other words, is identical in quality to that produced anywhere else. It is likely that price elasticity of more sophisticated CMEA manufacturers (i.e., automobiles, tractors, etc.) will depend more significantly on non-price factors—quality, design, availability of service—and aggressive marketing. For example, in spite of heavy infusions of Western technology and highly competitive prices abroad, Soviet exports of passenger automobiles constitute only 1.2 percent of Soviet exports (in value terms) to the industrialized West and have not significantly increased their share of world markets in recent years.



Photo credit: TASS from SOVFOTO

"Lada" cars, produced at the Italian-built Togliatti (Volga) plant. Similar cars are being exported to the West

Threats of disruption in American markets are therefore more likely to appear in categories of semifabricates. Most U.S. dumping actions against nonmarket commodities have, in fact, occurred in these areas. The threat of disruption is also great in the area of metals such as nickel and

aluminum, where capacity increases have occurred as a direct result of infusions of Western technology to the U. S. S. R.: Finland has provided nickel-refining technology to the Soviet Union and a French consortium built a 1-million-ton-per-year alumina plant on the Black Sea. It is apparently as com-

mon for West European and Japanese firms as it is for their U.S. counterparts to sell technology to nonmarket economies, conscious that in doing so they may ultimately decrease the market share of their capitalist competitors.

This is an important point, for only rarely is U.S. industry the sole contributor of technology necessary to increase nonmarket export potential. In the ammonia case, for example, both Japanese and French firms contributed heavily in terms of equipment and know-how to Soviet productive and delivery capability, and the American supplier of the technology did not possess unique or otherwise unobtainable technology. It is safe to assume, therefore, that had limitations been placed on U.S. sales of plant and technology, the Soviets would have obtained them elsewhere.

A U.S. Department of Labor study of the effects of industrial technology transfer has concluded that in most cases restrictions on technology transactions made by U.S. firms could not have eliminated the negative effects in terms of market disruption either in the U.S. or third-country markets. U.S. firms in most cases do not possess monopolies of the required technologies, and limiting sales only deprives the economy of additional income. The long-term negative effects on sales and market shares will still manifest themselves.

Obviously, this argument does not hold in those areas where U.S. firms hold a monopoly in a given technology, at least for the term of that monopoly. But there are very few of these areas and it is possible that embargoes in these instances may accelerate the development of the technology both in the East and the West. It has been asserted by Hungarian trade representatives, for instance, that when U.S. export controls denied them access to advanced computer-controlled machine tools, they were driven to develop their own models. These now compete with U.S. products in other markets.

In sum, the threat of net losses in U.S. development through technology transfer is

most significant in those sectors where market disruption is likely. In these cases, loss in sales by U.S. firms in both domestic and foreign markets may be greater than the value of the transfer contract, and net loss in income will translate into a loss of employment. Moreover, the cost of the resulting loss of jobs in other sectors may be compounded by labor market adjustment, relocation, and retraining. In terms of the aggregate economy, however, these cases may be partially offset by instances where the increased sales of technology and technology-intensive products result in a gain in employment in the selling industries.

IMPORTERS OF EASTERN TECHNOLOGY

By any standard, Eastern sales of technology to the West have been small. As of October 1977, for instance, the total value of all license fees and royalties paid by the United States to the U.S.S.R. was less than \$14 million. It has been asserted that there is considerable potential for increasing the amount of technology transfer from Eastern Europe and the U.S.S.R.,¹⁴ but barriers to such expansion exist on both sides. In the Soviet Union, and to a lesser extent in Eastern Europe, inadequate organization of sales efforts and poor marketing inhibit the growth of such trade; in the United States, the widespread perception that no technology of interest to American firms is to be found in the East, and the resources required to learn and evaluate the market may preclude U.S. firms from taking advantage of such opportunities as do exist. The continued dearth of Eastern technology in the West thus becomes a self-fulfilling prophecy.

Despite these handicaps, however, a few U.S. firms have aggressively marketed products produced as a result of Eastern technologies. Notable instances from the U.S.S.R. include excavation machines and surgical stapling devices. Technologies in several

¹⁴See John Kiser, "Report on the Potential for Technology Transfer from the Soviet Union to the U.S.," prepared for the U.S. Department of State, October 1977.

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It is unlikely that hitherto unsuspected major technological breakthroughs will come from access to Eastern technologies. The real potential lies in the possibility of marginal improvements in products and processes. In some segments of mass-production industries these can be significant. Furthermore, access to new products or processes may be an entry to large bodies of associated technical information. Soviet construction equipment for permafrost conditions, for example, has evolved from a volume of basic and applied research on arctic conditions. This would be useful both in Alaska and in the development of Antarctica.

The poor showing of Eastern nations in selling their technology abroad is related less to the availability of useful technology than to systemic factors such as the lack of incentive to sell abroad, lack of personnel trained in marketing, and bureaucratic structures poorly suited to facilitating foreign sales. Technological performance in the East, especially in the U. S. S. R., is erratic. Generalizations concerning poor performance may often cloak formidable accomplishments in priority sectors.

Thus, the potential for increased technology transfer from the East is heavily dependent on the ability of the Communist na-

tions to organize themselves efficiently and to make buying less difficult. On the other side, U.S. firms must actively seek these technologies. Systematic monitoring of technological developments of salable Soviet and East European technology in the civilian sector would greatly enhance the ability of U.S. firms to identify opportunities. Without such an effort, purchases of Eastern technology in magnitudes large enough to affect the U.S. economy as a whole, or even significant sectors of it, are unlikely.

THE CONSUMER

The effects of increased competition, even that induced by sales of technology abroad, are not always negative. Such competition may result in increased initiative in product design, manufacture, and marketing. It may also be argued that, given protection against predatory trade practices, inefficient producers should be eliminated if they cannot compete. In this way consumers benefit, and through them, the entire economy. Disposable income that was previously used to purchase more expensive consumer goods can be used elsewhere. Factor costs are lowered, raising profit ratios. These gains may be slight but are well distributed throughout the economy.

SUMMARY AND CONCLUSIONS

The volume of U.S. trade with the Communist world has been low, and the sale of U.S. technology to the East has as yet made little impact, either positive or negative, on the U.S. economy as a whole. A number of economic benefits have accrued to the United States through technology transfer to nonmarket economies. These are primarily in increased sales and employment in those industrial sectors that conclude the sales. In other sectors these benefits may be outweighed by potential negative effects such as decreasing market shares for U.S. firms both at home and abroad. It is unlike-

ly, however, that deregulation of technology transfer can ameliorate these adverse economic effects except in a few cases where the U.S. completely controls the relevant technology. Furthermore, given the present magnitude of East-West trade, any aggregate effects on the U.S. economy have been minimal. Should this trade grow significantly, Eastern exports to the United States will certainly increase. This may necessitate balancing the negative impact of the exports on individual industrial sectors with benefits in other parts of the economy.

Western technologies, while no panacea for Eastern economic problems, appear to benefit the economy of the purchaser to a much larger degree than that of the seller (see chapters X and XI). Barriers to expanding this trade exist on both sides, but the importance of restraints on the U.S. side—tariff and credit restrictions and export controls—may be outweighed by the problem of Eastern export potential. Overall volumes of East-West trade are unlikely to

expand significantly in the absence of improved manufacturing and marketing capabilities in the East, although demand for Western technology in these and other areas is unlikely to abate. U.S. policies on the extension of MFN and credits and export controls may affect the market share of American firms in the Western technology sold to the East, but will have less long-run impact on overall trade volumes than will improved Eastern capacity to export.