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The Impact of Technological Transfer on the USSR

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THE IMPACT OF TECHNOLOGICAL TRANSFER ON THE USSR

INTRODUCTION

In any international commercial or technological exchange, each party expects to benefit or the exchange would not take place. In their bilateral economic relations, the United States and the USSR are no exception. The chief economic benefit to the United States has been the opening up of the Soviet market. In 1973 the US export surplus in trade with the USSR climbed to about \$1 billion. The Soviet market holds continuing promise for US exports of machinery and grain, while the USSR may in time become an important source of raw materials for US industry.

The potential gains for the USSR in trading with the United States are well known: our equipment, technology, and know-how are greatly desired by the Soviets. Without US (or other Western) equipment and technology, the costs of producing some items would be higher; the time involved in producing them would be longer; or the quality of the product or service resulting would be less.

It is in this context that this paper examines, through a series of questions and answers, the economic and political impact on the USSR of the burgeoning exchange with the United States and the West.

Note: Prepared by OCI and OER for the NIO for the USSR and Eastern Europe. Comments and queries regarding this publication are welcomed. They may be directed to the Office of Economic Research

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I. ECONOMIC PERCEPTIONS

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1. How does the USSR assess its technological position?

In recent years, Soviet leaders have become aware that technical progress would have to be accelerated to recover the economic growth rates of the 1950s. During the 1950s, high rates of Soviet economic growth were generated by massive injections of labor and capital and respectable gains in productivity. As the postwar backlog of potential productivity gains disappeared, *the declining productivity of capital and the very slow growth in labor productivity have reduced economic growth to levels which the leadership considers too low.* Brezhnev told the Supreme Soviet in December 1972, "it is a question of achieving economic growth to an ever greater extent by increasing labor productivity and accelerating technical progress."

Soviet leaders seem to have mounted a three-pronged attack to improve the USSR's technological position.

- Attempts are being made to improve efficiency in domestic applied R&D.
- Western technology is to be imported for relatively short-run improvements in the technological position of key sectors such as oilfield exploration, motor vehicle production, and computer production.
- Technical cooperation agreements are being sought because they offer the USSR an opportunity to obtain long-term technological gains with minimum hard currency outlays.

The major failing of applied R&D, which the Soviets readily admit, is an inability to convert the results of basic research quickly and efficiently into usable technology for Soviet industry. This research-production gap is partly the result of poor organization that isolates researchers, designers, and customers. There is also a critical absence of incentives for industrial enterprises to assimilate new technology as well as a shortage of development facilities. Despite its shortcomings, the applied R&D sector is assigned a large role in accelerating technological progress. Soviet leaders are now attempting to eliminate some of these shortcomings through reorganization of industrial management and other bureaucratic adjustments.

The USSR is aware that its technological position in basic scientific fields is considerably better than in applied R&D. An official of the Soviet State Committee for Science and Technology (SCST) noted, for example, that basic research in chemistry is excellent but chemical engineering skills are deficient. The same discrepancy applies to computers. Nevertheless, the Soviets portray their technological position in basic scientific fields as sufficiently good to make

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long-term technical cooperation profitable both for the USSR and Western countries. Whereas they are not too forthcoming in just what they have to offer, they clearly hope to acquire the better engineering skills needed to convert research findings into usable technology for Soviet industry.

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2. What role and value does the USSR assign to the acquisition of Western technology?

Soviet leaders and top industrial managers believe that importing foreign technology will provide *production capacity in a much shorter time, and at less expense*, than it would take to develop the technology in the domestic applied R&D sector. As Kosygin put it, "it is cheaper in the long run to import or license foreign processes than to try to reproduce them."

The Soviet approach is to modernize a key industry or process to leading world standards in one step, if possible. The USSR tries to obtain the most advanced technology in existence, but will turn to secondary sources if satisfactory contractual or financial arrangements can not be made with the preferred source.

Soviet policymakers place an especially high value on technical cooperation agreements with Western firms. Not only do these agreements hold promise for long-term technology transfers, but they would also be much cheaper than large purchases of machinery and equipment. Furthermore, cooperation agreements are less damaging to Soviet pride than outright, one-way transfers of technology from the West to the USSR. N.S. Patolichev recently expressed indignation at what he called "voices alleging that the Russians are pumping out advanced Western technology" and went on to stress the mutual benefits of cooperation, citing licensing agreements under which West European countries have purchased Soviet technology.

Little evidence is available concerning the value assigned to imports of technology for individual industrial sectors. In general, the priority accorded chemical technology in the early 1960s gave way to automotive technology in the late 1960s. As automotive requirements are being met, chemical technology is gaining renewed importance, and the priority of computer technology appears to be rising. Soviet planners know that mastery of modern industrial process technology depends on a strong computer capability. Furthermore, the USSR is anxious to set up regional and nationwide computer networks to aid in planning and data gathering. The USSR is quite aware that massive transfers of Western technology are necessary if this is to be done within a reasonable amount of time.

Recent imports of technology fall into four categories in terms of the capacity that they provide.

- Many imports are intended to *give the USSR production capacity for goods that have not yet been mass produced in the USSR.* For most of these products, the Soviet applied R&D sector has created prototypes, and foreign assistance is needed to implement mass production. Computers and electronics provide outstanding examples of this kind of transfer. Prior to 1970, for example, the

USSR had no technology or equipment to manufacture the printed circuit boards needed for computer production. The technology apparently was purchased from France, and the United States and Great Britain supplied the necessary equipment – spray etchers, laminating presses, and numerically-controlled drilling machines. The USSR also imported US and UK computers for which no Soviet counterparts existed.

- Technology is imported to *upgrade existing Soviet technology to state-of-the-art levels*. Rather than install obsolete domestic foundry technology at the Kama truck plant, the USSR imported the design and equipment for a state-of-the-art automated foundry from the United States. Similarly, Soviet engine manufacturing technology was discarded in favor of modern, specialized US equipment that allows economical mass production of diesel engines for heavy trucks. Although the Soviet chemical industry has already benefited from imports of Western technology over the last dozen years, in 1973 the USSR imported a US acetic acid plant that utilizes a process previously unavailable in the USSR.
- Advanced Western technology is imported to *supplant Soviet-made equipment that does not meet requirements for quality or reliability*. Imports of oscilloscopes and videotape recording equipment fall into this category, as do important kinds of oilfield and pipeline equipment. Technology imported for the manufacture of chemical products has allowed the USSR to upgrade the quality of intermediate products for synthetic fibers and plastics.
- Finally, technology is imported to *expand existing capacity to remedy shortages*. Much chemical equipment and technology is now being imported for this reason. The USSR is attempting to obtain US plants and equipment to manufacture larger quantities of intermediate products for plastics, fertilizers, and synthetic fibers. While these products are already mass produced and some are of adequate quality in the USSR, additional quantities are needed to meet all requirements. Other examples of this kind of import are French gas processing units purchased to supplement Soviet equipment and digital playback centers to locate oil and gas deposits. The USSR also wants to install additional production lines in the automobile plant at Tol'yatti.

3. How do these Soviet assessments differ from ours? What are the reasons for the differences?

Western views of the Soviet technological position differ from the Soviets' own perception largely in degree.

The technological position of the USSR varies greatly from industry to industry as a result of the system of priorities under which Soviet economic planning has been conducted. The USSR has virtually a dual economic system – military and civilian. Traditionally, the military sector has had priority allocations of high-quality manpower and materials, as well as protection from Party interference. Thus, the military sector has flourished and has achieved near technological parity with its US counterpart in the production of many types of weapons and space equipment. The civilian industrial sector, however, is plagued with backward technology, supply shortages, and management problems that do not appear to exist in the military sector, or at least not to the same degree.

We see the USSR as further behind and more dependent on the West for civilian technology than Soviet leaders openly admit. The basic industries whose output directly supports both military production and investment programs – steel, fuels, electric power, producers equipment, and chemicals – have received sufficient priority so that their technology occasionally equals that of the West. But the bulk of Soviet output is produced with technology obsolescent by Western standards. Imports of technology in recent years have been heavily weighted in favor of machinery, equipment, and know-how to modernize these basic industries.

In industries producing consumer goods, the USSR is operating at a technological level far below Western standards. Greater recent concern by Soviet leaders with consumer welfare, however, has led to increased purchases of technology to improve the output of consumer goods. The USSR recently contracted to purchase two factories from the United States to produce tableware, for example.

We share the Soviet view that *the technological gap is large and probably widening. But we are less sanguine than Soviet planners about the contribution that foreign technology will make to closing the gap.* To the extent that Western technology continues to advance beyond the level of technology sold or embodied in the equipment exported to the USSR, the gap will persist. The long delays typically experienced by the USSR in getting new technology on stream virtually assures that this will be the case. For example, the Kama truck plant is being furnished with some of the most modern equipment and processes available. Western observers believe, however, that the USSR will experience years of delay in trying to bring all of the equipment together into a successfully integrated operation. By that time, the trucks may well be obsolete by Western standards.

We expect Soviet imports of foreign technology to raise technological levels in key areas such as computers, electronics, oilfield exploration, and the like, but not to effect a substantial improvement in the general level of Soviet industrial productivity. In fact, imports of technology may perpetuate disparities in the technological level of Soviet industry. Since diffusion of technology in the USSR is slow and uneven, the technological level of some sectors will improve while others will fall farther behind.

Management problems in the USSR that inhibit the diffusion and utilization of domestic technology will also work against assimilation of foreign technology. Soviet enterprise managers are still rewarded primarily for fulfilling output plans and are unwilling to interrupt production to install new equipment, foreign or domestic. Management in the applied R&D system is also rewarded for fulfilling plans, not for developing usable technology or facilitating its wide dissemination. The USSR has been struggling for years with the need to improve incentives to solve these problems. But the leadership is inclined to tinker with the administrative apparatus of the economy rather than tread on the ideologically unsure ground of reform with respect to material incentives (prices, wages, or profits).

Even if these problems could be overcome – and this is a big "if" – *the massive imports of technology and equipment needed for an across-the-board improvement in Soviet technology sufficient to close the gap substantially would be extremely costly.*

Nonetheless, the Soviets believe that imports of Western equipment and technology have made, are making, and will make important contributions to the level of their technology and are therefore willing to pay substantial sums of foreign exchange and accumulate foreign debt to acquire Western equipment and technology. The Soviets probably do not think in terms of the contributions of Western equipment and technology to overall growth. The questions asked more likely are: what would imports of Western equipment and technology do for the output of large trucks or passenger cars? for the production of synthetic fibers or plastics? for the extraction of oil and gas? In other words, *it is the Soviet perception of the importance of Western technology and equipment in concrete instances that persuades the Soviets to press for increased trade and technology exchange with the West*, and not Western analyses of the impact of such imports on overall Soviet economic growth.

Additionally, because the Soviet R&D establishment is not in a position to provide the equipment, technology, and know-how that the leadership believes is required to achieve planned goals, there is no real alternative to Western suppliers. Until the Soviet leaders find ways to overcome the shortcomings of the applied R&D sector, reliance on the West for advanced equipment and technology will persist.

4. In addition to assistance in overcoming technological backwardness, in what other areas is the Soviet government interested in expanding economic relations with the West?

Traditionally the *Soviets have traded with the West to acquire advanced equipment and technology as well as commodities in short supply*, such as the large purchases of grain in 1964-66 (\$1.3 billion) and again in 1972-73 (\$2.2 billion). The function of exports has been to generate enough foreign exchange to pay for imports. Because of a chronic shortfall in exports, the USSR has had to finance some imports by Western credits and by sales of gold.

The additional areas in which the USSR is now interested reflect these traditional Soviet aims.

- The USSR needs more Western capital than has been made available through normal long-term credits to enable the USSR to tap basic resources and undertake large industrial projects.
- The USSR recognizes the need for advanced management techniques to introduce greater efficiency in the Soviet economy and has been seeking them in the West.
- The Soviets are pushing export expansion more than in the past in order to finance increased imports and, presumably, to reduce their heavy dependence on increasingly expensive Western financing.

A major hoped-for benefit from expanded economic relations with the West has been the infusion of substantial foreign capital, plant, and equipment in support of Soviet investment programs. The planned rapid development of Siberian resources, for example, depends on the USSR's ability to obtain unprecedented amounts of foreign capital. The USSR is discussing several development projects with the West which in total would require \$10 billion to \$20 billion in Western plant and equipment during the next several years. Total Soviet debt to the West, in contrast, currently stands at less than \$4 billion. Energy-related projects would be particularly expensive, with the natural gas development in Yakutsk and Project North Star each involving at least \$2 billion to \$3 billion over a five-year period. The Soviets have also recently approached the Japanese for some \$3 billion in loans to cover the construction of a second Trans-Siberian rail line which would be used to transport crude oil for export to Japan. Other projects relating to coal, timber, and copper would require several billion dollars.

The USSR also hopes that increased relations with the West will allow it to *benefit from Western management expertise*. Moscow is particularly aware of the need to upgrade management techniques and has taken several steps to draw upon Western knowledge in this field. Selected Soviet officials, for example, may soon

study business management in US institutions. In addition, Soviet managers and industry officials have had an opportunity to discuss management problems with Western businessmen and observe the benefits derived from the application of various Western management techniques. In some instances, the USSR has enlisted the assistance of Western consultants - the Arthur Anderson accounting firm of the United States, for example - in a direct attempt to upgrade the quality of Soviet industrial management and control. In other efforts to improve production and sales, the USSR has sought Western training in computer applications. Similarly, the USSR greatly desires US assistance in the management of large agricultural complexes, especially for livestock and poultry.

Over the long term, increased Soviet imports of Western technology and equipment must be supported by an increase in Soviet exports to the West. As a result, *export expansion - particularly of manufactured goods - is a key Soviet goal* in expanded economic relations with the West. The USSR has expanded efforts to establish outlets in the West, often in partnership with Western businessmen. The Soviets have also engaged Western firms to research potential markets for Soviet products, or to assist in marketing and production design through agreements such as the one signed in 1973 with Raymond Loewy.

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II. CURRENT FOREIGN ECONOMIC POLICY

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5. How far have the Soviets moved from a policy of autarky to full acceptance of an international division of labor?

Soviet Minister of Foreign Trade Patolichev wrote in *Pravda* in December 1973 that "rapid technical progress cannot be accomplished without the broad use of world achievements in individual branches of production and without the mutual exchange of these achievements, i.e., without the active development of the international division of labor." The statement, taken at face value, is a far cry from the often proclaimed Soviet goal of economic self-sufficiency – before World War II, to combat "capitalist encirclement," and after World War II, to create a self-contained socialist alternative to the capitalist economic world.

Almost *from the very beginning of the Soviet state*, economic planners in the USSR *believed that selective trade with the more technically advanced countries of the West should be used to achieve economic self-sufficiency* more rapidly. The temporary upsurge in trade with the West in the early 1930s was in fact so designed.

After World War II, Stalin tried to adapt the self-sufficiency concept to the Communist countries as a group, with the aim of creating a bloc which would no longer have to trade with the West. Trade with the West declined until Stalin's death, and indeed did not increase substantially until Khrushchev decided in the late 1950s that Soviet plan goals could not be met without Western help. The table below shows that the share of trade with the West increased when the Soviet leadership expressed special interest in this trade – after Khrushchev's pronouncements on trade, and again when trade with the West was given heavy emphasis in the Eighth Five-Year Plan directives published in 1965.

Current Soviet efforts to obtain Western goods and technology have again resulted in an upswing in trade with the West. The share of the West is now larger than at any time since 1948. It is too early to judge whether this share will increase further. But looked at in the perspective of two decades, *continuing Soviet efforts to obtain Western equipment, technology, and now large sums of capital are leading the USSR willy-nilly to a greater dependence on the West*. The USSR, for example, is committing itself to long-term deliveries to Western trading partners and increasing its participation in the international division of labor. In the gas-for-pipe deals with firms in Austria, Italy, West Germany, France, and Finland, the USSR agreed to deliver natural gas for periods of 20 to 30 years. Long-term Soviet supply commitments also are involved in the French participation in the Ust-Ilimsk pulp complex and in the Italian Montecantini-Edison's sale of seven large chemical plants to the USSR. The same type of arrangements apply to the prospective multibillion dollar projects which envision US and Japanese development of Soviet fossil fuel resources.

Obviously there are limits to dependence on trade with the West. The USSR is still working toward CEMA integration, with a major objective being an integrated

USSR: Trade with the Developed West

	Trade Turnover (Billion US \$)	Share of Developed West in Total Trade (Percent)
1950	0.5	15
1955	1.0	15
1959	1.6	16
1960	2.1	18
1964	3.0	20
1965	3.0	19
1966	3.5	21
1967	3.7	20
1968	4.2	21
1969	4.7	22
1970	5.1	21
1971	5.6	21
1972	7.0	22
1973	11.0	25

economic plan for the member countries for 1976-80. Writing in *Izvestiya* O. Bogomolov, Director of the USSR Institute of Economics of the World Socialist System, suggests that it might be more advantageous to rely on foreign suppliers for some items and, meanwhile, expand export capacities in areas where the USSR has a comparative advantage to pay for rising imports. He recognizes, however, that before the USSR ever "fully" subscribes to the idea of the international division of labor, "much time and effort will be required to solve many theoretical and methodological problems," and a "certain psychological reorientation of Soviet thinking, working, and planning" will be required.

6. In seeking new technology, in what areas is the United States the sole or clearly the best supplier? Conversely, to what degree can the USSR meet its objectives from non-US Western sources?

In many areas, the USSR can obtain technology equal to or even better than US technology from other developed Western nations. In some areas, however, the United States clearly possesses the best technology in the world, or is the sole supplier. The flavor of the situation can perhaps be suggested by a survey of some of these high-technology sectors.

Computer Technology

The United States is the only country that can provide computer hardware and software across the entire spectrum. For very large scientific machines (such as the CDC 7600), the United States is the sole supplier, and manufacturing technology for producing general-purpose computers on a very large scale exists only in the United States. Also, certain types of production equipment (high-capacity core presses) and computerized testing systems are available only in the United States. But design and production technology for most hardware and software systems are available in Western Europe and Japan. Japan, Britain, West Germany, France, and the Netherlands all have a diversified product mix, but produce on a much smaller scale than the United States.

Semiconductor Technology

The United States leads the world in semiconductor technology and is the only country that can supply the USSR with design and production technology for semiconductor devices across-the-board. For advanced integrated circuits (IC) technology - that is, high-speed and high-density devices (MOS/LSI) - the United States is still the sole supplier. It is also clearly the best supplier for advanced semiconductor production and testing equipment such as computer-aided design systems, computerized IC testers, and ion-implantation equipment and techniques.

Nevertheless, technology for the production of modern semiconductors is available outside the United States, although only Japan has an industry sufficiently large and diverse to be able to supply the USSR with a wide range of production processes. Japan is particularly strong in areas where the Soviets appear to be weak - diffusion, mask-making, and probe testing.

Western Europe, considered as a unit, could supply the USSR with a wide range of semiconductor technologies. However, [redacted] consistently has opposed in COCOM the sale of this technology to Communist countries. [redacted]

Non-COCOM countries have limited capabilities in select areas, but are not able either individually or collectively to meet Soviet needs. Switzerland is strongest in thin-film technology and Sweden in hybrid integrated circuit technology.

Petroleum Industry

The United States clearly is the best supplier of complete systems for onshore, offshore, and permafrost exploration, production, and pipelining. Advanced geophysical equipment and related computer hardware and software that would best serve the USSR's exploration needs can be acquired only in the United States. US firms also manufacture the most advanced drilling and production equipment in the world. Only US companies, subsidiaries, or foreign licensees manufacture fully automated pipeline valves, compressors, and pumping equipment for large diameter pipelines. Permafrost technology is largely controlled by US firms and their Canadian affiliates and subsidiaries.

As with computers, however, Soviet objectives could be met to a considerable degree by turning to non-US sources. Britain, France, and West Germany can supply certain types of seismograph and geophysical equipment. Some offshore technology is being developed by Dutch, French, Norwegian, British, and Japanese firms. Western Europe and Japan can supply large diameter linepipe. The USSR could carry out its exploration and development programs with its own equipment, supplemented from such non-US Western sources, but at greater cost and over a longer period of time than would be the case if it had access to US technology and equipment.

In petroleum refining the United States leads the world in technology, but again the USSR could meet most of its needs from non-US sources. West European and Japanese firms can supply most of the process equipment and the technical assistance required, although some processes may be available only under US license arrangements.

Automotive Technology

Automotive technology available in Western Europe or Japan generally is good and often is available on more favorable purchase terms than in the United States. The United States has the best specialized automotive machine tools (e.g., transfer machines) for high-volume output and computerized warehousing systems. Because the USSR has based the differential gearing of its cars and trucks on US design (tooth-form), the United States is its sole source of supply for differential gear-cutting machine tools incorporating the latest technology.

The United States is probably the only country the USSR can turn to for the design of very large automated foundries. The foundry that the USSR recently acquired from Swindell-Dressler for the new Kama plant embodies a unique

production process. The United States is also the best supplier for certain types of foundry machinery, such as very large melting and molding machines.

Chemical Industry Technology and Equipment

The extensive cross-licensing of chemical technology and the restricted nature of much industrial cost data makes it difficult to differentiate national origin or excellence among several chemical processes. Certainly US process technology for large-scale production of a broad range of petrochemicals and synthetic materials must be ranked among the world's best. Nevertheless, most of the equipment needed for such processes can be produced by non-US firms. For example, although US technology was provided for five Soviet ammonia plants ordered in 1969-71, Japanese firms provided much of the equipment.

There may be a clearer case for US technological superiority in the field of relatively low-volume but important chemical or related items such as catalysts, fiberglass products, and engineering plastics. But the US superiority by no means extends to all such materials. Moreover, substitutes entailing some sacrifice in efficiency and cost probably are available.

Given the present Soviet chemical priorities – synthetic materials and fertilizers – the USSR does not depend much upon direct purchases of technical data from US firms. The chemical and petrochemical technology needed by the USSR can be obtained mainly in Western Europe or Japan. West European firms can supply modern equipment and technology for a number of man-made fibers, plastics, fertilizers, and related intermediates. Japan has a substantial capability for providing petrochemical technology and equipment as well as process and design data for installations producing synthetic fibers and plastics.

Aircraft Production

US civil aircraft production technology ranks with the best in the world, although it is uniquely superior in only a few areas. The greatest US advantage is its overall, large-scale systems approach to civil aircraft production. Except for some parts of inertial navigation systems, the large-scale numerically-controlled assembly line operation, and some aspects of airframe fabrication, US technology can be matched by France, Britain, and West Germany. The USSR could acquire advanced engine technology in Western Europe that is equivalent to US technology if it were not barred by COCOM trade controls. US technology for air safety (air traffic control) and for pollution control rates among the best in the world but can be matched by other Western countries, particularly Britain.

Other

The United States is the sole supplier of heavy-duty industrial tractors and the largest sizes of earth-moving equipment, such as front-end loaders and dump trucks. It also is the sole supplier of the process for manufacturing grain-oriented electrical sheet (for transformer cores), although the machinery is available in Western Europe and Japan. The United States is the best supplier of numerical controls for machine tools, especially those for simultaneous control of more than two axes. US numerical controls are easily programmed, and delivery times are more favorable than elsewhere.

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III. ECONOMICS AND DETENTE

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7. How important are economic considerations, particularly technological transfer, in the general Soviet policy of detente?

Economic considerations, particularly technological transfer, are *extremely important, but not overriding* in Soviet detente policy. Such problems as coping with China, controlling nuclear risks, and advancing Soviet political influence in Western Europe are also important factors in leading the USSR to adopt a detente approach. Economic considerations complement these other aspects of detente, offering an alternative to autarky and a response to changing world conditions.

The Soviets need advanced Western technology and have flatly admitted this. The USSR can, as it has in the past, however, do without US or other capitalist assistance and obviously can do so in the future. Given the self-imposed Soviet commitment to accelerate technological progress and economic growth and to overcome deficiencies in critical sectors of the economy, the USSR would in some areas prefer to obtain superior US technology and know-how and have access to the large US capital market. Without detente, this desire would go largely unfulfilled.

The Soviets *already have obtained important economic benefits* from detente: massive quantities of grain to mitigate the effects of the 1972 crop failure; technology and equipment delivered or ordered that were previously denied by US export controls, and more than a billion dollars in credit to finance grain and machinery imports at a time of difficult payments problems.

The USSR has obtained substantial amounts of equipment and technology from Western Europe and Japan as well as ample long-term credit to help finance such imports. In some instances, US technology and equipment would have been preferred, but the levels of technology embodied in much of the equipment imported were in any event superior to that available in the USSR and Eastern Europe. Even though the relaxation of US export controls has made considerable amounts of US equipment and technology available, the USSR continues to place 80%-85% of its orders for Western capital equipment in Western Europe and Japan.

Superior *US technologies which the Soviets would like to acquire* in helping overcome some deficiencies in critical industries *include equipment and technology for the petroleum industry, computers, and semiconductors*. Aside from outright purchases of equipment, access to highly prized US technology would also be realized via the scientific and technical agreements that the Soviet Union has concluded with more than 20 US corporations and other organizations. In seeking a foothold in the Soviet market, US companies may be willing to part with technology that the USSR desires but has not been able to obtain through trade channels.

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Perhaps one of the most important benefits which can be derived from detente is access to US technology, know-how, and capital through so-called *cooperative arrangements*. Without US capital, for example, some of the ambitious projects the Soviets have in mind - North Star and Yakutsk gas or Sakhalin oil - would have to be postponed - some for many years - since the USSR is unwilling or unable now or in the near future to make the necessary investment to develop these resources and sufficient capital is unavailable in other countries.

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8. To what extent would the USSR sustain its current foreign economic policy if detente faltered badly on other fronts -- e.g., arms control, the Middle East?

If detente suffered in important strategic or political areas, Moscow would make great efforts to sustain its foreign economic policy so long as some major Western governments were receptive. The *economic considerations* that led Moscow to formulate its current policy of improving business ties with the West *would remain* even if certain political considerations supporting detente lost various specific competitions with other Soviet policy priorities.

Almost 60 years of economic experimentation have failed to deliver the USSR from its relative technological backwardness compared with the industrial states of the West; this has been acknowledged by some of the more forward thinking Soviet officials. These Soviets also acknowledge that the gap may widen between East and West in the vital area of economic competition unless vigorous efforts are made to adapt to the demands for technological growth.

Apart from the desire to lessen the risk of global nuclear conflict, probably no other aspect of Moscow's current detente policy has developed a stronger consensus among Soviet leaders than its economic policy. However, there are doubtless greatly differing views on the implications of detente for the structuring of the Soviet domestic economy. *The need for Western technology and credits seems to have few serious critics, though there are strong forces in Moscow who oppose any fundamental tampering with the Soviet economy* in order that it might more effectively absorb the technology and investments the USSR seeks. There are also influential circles who worry about the constraining implications of growing economic interdependence.

A serious setback for detente would seriously hamper but not stop the Soviet leaders from pursuing their foreign economic course. The Kremlin would likely judge that it would have to forgo some of the economic benefits it seeks from the West, but that it would be able to maintain economic dealings with some major Western governments and in time restore beneficial relationships with others.

9. Do Soviet foreign policy considerations involve a preference for US suppliers?

Yes, for both political and economic reasons. Soviet officials have for some time said that Moscow would prefer US sources of advanced technology and credits in order to strengthen political relations and create conditions for greater mutual trust. Among economic considerations, the Soviets clearly like the resourcefulness of US businessmen and the American technological experience, and they know that the volume of capital investments they require is available from virtually no other Western state.

The Soviets have also made the case, however, that unless the US terms for expanded economic ties are economically non-discriminatory, they will be forced to turn to other states for the technology and capital they need. They have insisted that most-favored-nation (MFN) treatment in particular be granted, inasmuch as Moscow cannot indefinitely accept an unfavorable trade balance with the United States. They have acknowledged that a trade deficit with the United States will exist for some time, even under the most favorable conditions, but that this situation can eventually be corrected as the Soviet economy adjusts to US and other Western market demands.

If the Soviets are eager to reinforce the positive bilateral political relationship by means of expanded economic ties with the United States, they are not eager to pay a political price for economic objectives desirable in themselves. *The Soviets have insisted that there be no political preconditions for increased economic ties with the United States, but in fact they have shown a certain willingness at times to make some political concessions* – e.g., on Jewish emigration – to gain the kind of economic benefits they seek. They have also indicated, however, that there are sharply defined limits to the concessions they are prepared to offer so long as the prospects for acquiring MFN and credits are unfavorable.

Apart from normal business bargaining for the best deal available, Soviet competitive bidding for Western technology is also grounded in ideological rationale. The Soviets view economic competition among capitalist states in particularly stark terms, characterizing it as an unbridled, unprincipled scramble for national and corporate advantage.

It is not surprising therefore that Moscow should attempt to play the leading Western nations against each other both for political and commercial advantage. Thus Soviet Trade Minister Patolichev, in an effort to prod the United States into granting more favorable credit terms, threatened in February to take Soviet trade elsewhere in search of better terms.

Perhaps more surprising is the readiness with which Soviet leaders have for political reasons bluntly threatened to boycott US firms attempting to do business with a fraternal socialist ally, Romania.

10. To what extent do Soviet leaders view increased trade and exchanges with the West as a vehicle for building Western constituencies with vested interests in pressing for greater accommodation to broader Soviet objectives?

Soviet leaders clearly hope that increased commercial contact between the United States and the USSR will aid in "making the process of detente irreversible." Moscow has consistently pressed for a very high level of bilateral trade, and Kremlin leaders from Brezhnev down have shown a preference for long-term economic commitments, ranging up to forty years. They obviously make a strong connection between the breadth and depth of economic ties and the "stability of US-Soviet relations as a whole."

The Soviets apparently expect that the capitalist appetite for profit, once sufficiently whetted, will prove a powerful force in shaping future Western policy toward the USSR. In addition to the economic dividends which they see flowing from expanded commercial contact, the Soviets probably expect enhanced political leverage with the West, though they must realize that this can cut both ways.

Moscow appears already to regard US businessmen as allies in the campaign to defend detente against its Western opponents. Soviet commentators, for example, have been quick to publicize support from the US business community for liberalized trade and credit policies toward the Soviet Union.

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IV. THE INTERNAL POLITICS OF THE MATTER

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11. Is there any evidence that Brezhnev is out in front of his Politburo colleagues in promoting trade with the West, and with the United States in particular?

Brezhnev is the principal spokesman for the Soviet leadership on most subjects, certainly including detente and its economic aspects. He has spoken more voluminously and more often than any other member of the Politburo, and his recent collected speeches outweigh even the sum of all the other members. He is patently, therefore, "out in front" of his colleagues. There is, of course, a difference between being the spokesman for an agreed position and being a proponent of that position in the closed councils of the Politburo. On the specific issue of trade with the West and with the United States in particular, however, there is no evidence to suggest that Brezhnev is now a reluctant front-man for a policy he regards as distasteful or dubious. Moreover, from the Kremlin vantage point, his identification with detente with the United States is no more marked than his identification with detente with West Germany.

The General Secretary is a relatively new convert on this subject. In the mid-1960s, Kosygin as Premier was actively pushing trade prospects with both Western Europe and the United States. Brezhnev, then focusing on his responsibilities as Soviet head of the international Communist movement, was suggesting that praise for Western technology by proponents of trade with the West denigrated the achievements of the "socialist camp." Since 1970, however, Brezhnev has more than made up in volume and enthusiasm for his laggard performance earlier.

In part because of his enthusiastic personal style, Brezhnev is particularly associated with a series of large projects, rather than with the less dramatic general growth of trade. This has been true in his discussions with the Germans and Japanese as well as with the United States. *Brezhnev, more than his colleague, thus is linked with projects whose failure would be public and conspicuous.*

Some comparison of how individual Politburo members stand on economic cooperation with the West is possible on the basis of a series of speeches made by 13 of the 16 full members in the fall and winter of 1973-74. The positions that emerged must, of course be viewed with caution. Polyansky and Shelepin, for example, have both suffered political setbacks and must be concerned to maintain their acceptability to the General Secretary, regardless of their inner inclinations. There are, in addition, professional or bureaucratic inhibitions. It would be inappropriate for Grechko as Minister of Defense to dwell on the economic benefits to flow from detente. His responsibility is to assure his audience that the security of the Soviet Union will not be endangered by such a policy and to assure the military that they are still needed. Similarly, Andropov as chief of the KGB can scarcely afford to denigrate the threat of ideological subversion from the West.

With these caveats in mind, however, there are some differences in emphasis to be gleaned from the speeches. *No one expressed explicit doubts about trade with either the United States or Western Europe, but some were more enthusiastic than others.* Brezhnev, Gromyko, Kosygin, Mazurov, Polyansky, Shelepin, and Suslov all specifically mentioned economic factors in the context of improving relations with the developed countries. Brezhnev at the high tide of his enthusiasm in October commented that the times require a "broad international division of labor". He described "mutually advantageous, long-term, large-scale, bilateral and multilateral cooperation" as a means for "dependable material strengthening of peaceful relations between states."

Gromyko noted that "multilateral and mutually beneficial contacts" with the states of Western Europe are expanding." His long and relatively favorable account of relations with the United States contained no reference to trade, possibly in recognition of the sore point of failure thus far to achieve MFN status. In contrast, he made specific reference to prospects for trade with Japan, including "joint economic projects in Siberia and the Far East."

Kosygin came down hard on scientific and technological progress, an area of exchange with which he has long been associated. He argued that it represents the main way to raise Soviet labor productivity, and that both rising living standards and successful economic competition with capitalism depend on the rate at which technological achievements are introduced into the Soviet economy.

Mazurov called for "constructive business links with capitalist states", a slightly less enthusiastic formulation. Polyansky pointed to the economic benefits of detente, and Shelepin called for large-scale mutually advantageous economic relations with the capitalist world. Suslov called for large-scale, long-range, mutually advantageous economic relations among capitalist and socialist states.

A *second group of leaders* used *less explicit* formulations that could still be interpreted as including prospects for trade among the benefits to flow from detente. Andropov described improving relations with the West as creating the most favorable conditions for the construction of communism in the USSR. Grechko referred to the promise of the creation of conditions for the USSR's "further advance along the path toward communism." Kirilenko referred to "prospects for mutually advantageous cooperation." Kulakov noted that "a considerable advance had been achieved in the development of relations between the Soviet Union and the United States and several other states."

Podgorny's references to the potential benefits from detente were cast almost solely in state-to-state terms - "mutual respect for territorial integrity and sovereignty", "non-aggression", "non-interference in internal affairs." His sole reference to trade was limited to Europe and was so low-keyed as to be almost

a brush-off: "If today ... business cooperation among states is expanding ... this testifies to the fact that positive tendencies in this part of the world are gaining strength." He made no reference to Soviet-US relations in any field.

A rough leadership grouping on the economic elements of detente might look like this:

Explicitly Pro

Brezhnev (Party head)
Gromyko (Foreign Minister)
Kosygin (government Premier)
Mazurov (1st Deputy Premier, industrial responsibility)
Polyansky (Minister of Agriculture)
Shelepin (trade unions head)
Suslov (senior Party ideologist, world Communist movement expert)

Ambiguous

Andropov (KGB Chairman)
Grechko (Minister of Defense)
Kirilenko (Brezhnev's Party deputy, supervises industry)
Kulakov (Party Secretary, supervises agriculture)

Minimizing or silent

Podgorny (Head of State)
Pelshe (Party-Control Commission)

12. How strong are the political forces opposed to increased economic relations with the West and the United States?

A number of the USSR's more powerful interest groups seem to have reservations about the wisdom of increased economic relations with the West and the United States.

The one most frequently mentioned by Soviet sources is *the Party bureaucracy* itself -- *specifically, the regional political bosses* whose views carry a good deal of weight with the top leadership in Moscow. Their negative attitude toward increased trade with the West is said to be prompted by several factors -- not the least of which is a conviction that it would violate an unwritten "Trading with the Enemy Act." Briefly put, many of these local satraps are far more isolationist and suspicious of the capitalist West than Moscow-based officials seem to be at this time.

Regional Party leaders' negative attitude is reinforced by their awareness that they themselves will have to cope with the local dislocations resulting from any increase in trade with the outside world. They are the ones who will be tasked with seeing to it that local enterprises adjust to the new conditions: make use of the imported technology even though change-overs interrupt production, conform to higher standards of quality, and so forth. They will also be responsible for making sure that increased trade does not lead to undesirable side effects in the political sphere, and that rising expectations of the Soviet population do not get out of control. *While some may view East-West trade as a panacea for Soviet ills of the moment, most probably see it as only adding to the complications of their day-to-day life.*

The Soviet ideologists and security officials responsible for dealing with "imperialist" intrigues and subversive activities are also likely to be against increased East-West trade. Many undoubtedly view the prospect with alarm, certain that it will make it easier for foreign intelligence services and other hostile forces to operate within the Soviet Union. While some KGB and GRU officials may feel that more trade will make it easier to recruit foreigners to work for the USSR and to assign Soviet intelligence officers abroad, most probably see it as working against Soviet national interests, as well as their own.

The attitude of the Soviet *defense establishment* is more difficult to fathom, but it may be significant that it has been the political officers -- responsible for the ideological health of the armed forces -- who have emphasized the importance of economic autarky and integration with the other socialist countries along CEMA lines, rather than economic cooperation with the capitalist world.

Meanwhile, it is the experts at the policy-oriented research centers such as the USA Institute in Moscow who come out with the most outspoken endorsements,

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in private and in public, of more East-West trade and cooperation in scientific and technological fields. Several of these experts have ties, past if not present, with the Soviet military hierarchy, specifically with the General Staff. It seems likely that at least some professional soldiers also feel that economic growth and social investment, not just military hardware, are required to ensure that future defense needs can be met. This is likely to be particularly true of those familiar with the problems connected with qualitatively improving Soviet weapons.

At the same time, it seems unlikely that this attitude would predominate among lower-level officers – the colonels in troop units – who may see detente as all right in itself but dangerous when it threatens to weaken troop morale. They and their superiors, up to and including military district commanders and their counterparts in the navy, probably feel that any increase in East-West contacts could make it more difficult for them to keep the Soviet armed forces up to the mark in terms of combat readiness.

Additionally, there are *other known grounds for opposition to increased economic ties* with the West, although the exact political clout of their adherents is uncertain. One school of thought objects to paying for increased Western imports with Soviet raw materials, especially energy-related resources. The worldwide energy shortage has given new force to this argument. Concern also exists that increased trade with the West will arouse Soviet consumer expectations that the regime will be unable to fulfill.

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13. Are there any indications of the development of important vested interests in acquiring important new means of technical and economic assistance from the West?

There is some evidence of the rise of vested interests in the Soviet Union at both the national and local levels which are actively promoting increased economic ties with the West. Such interest groups may be defined as those which have been able to build new administrative empires and/or set more ambitious production goals because of the import of Western technology and equipment.

The *most important* of these *groups* are:

- a. the State Committee for Science and Technology (SCST);
- b. certain economic ministries;
- c. research institutes; and
- d. production associations.

In general, whatever policy promotes trade is in the best interest of the Ministry of Foreign Trade. However, at least one report suggests differences of opinion and very real bureaucratic maneuvering among middle-level Ministry officials as to the relative merits of the US and West Germany as trading partners for the Soviet Union. No doubt there are others who view a major expansion of trade beyond CEMA boundaries with foreboding. But Patolichev's public support has, as noted earlier, been unequivocal.

The *SCST* was placed directly under the Council of Ministers in 1965 and has a broad mandate to establish the priority of and approve all national scientific and technical programs. Included in this task are the identification and introduction of foreign science and technology into Soviet industry. The Committee's Chairman, Academician V.I. Kirillin, claims that it acts mainly as a catalyst in this respect, paving the way for cooperation between Soviet ministries and foreign traders. It is much more than that, however, since it approves the expenditure of most foreign currency for Western equipment and technology and signs virtually all "scientific-technical cooperation agreements" with foreign firms and governments.

Soviet leaders view technical progress as neither haphazard nor spontaneous but as *a process amenable to central planning and control*. Assessment of the USSR's technological position and the formulation of technology policy are carried out in great detail at the highest party-government levels as part of the long-range economic planning process. Once these plans are set, there is a strong disinclination to change them. This is one respect, of course, in which the whole Soviet economic organizational structure is likely gradually to acquire a vested interest in technological transfer and the rest of economic transfer.

The planning goal of such bodies as the SCST is to formulate a long-term, integrated technology policy that combines imported technology with domestically developed technology in a complementary fashion. To this end, the SCST is assigned the job of sorting out the technological problems that will receive priority. It then decides which technology will be obtained abroad and which technology will be developed domestically. For the top priority projects, even the decision regarding a particular foreign supplier is believed to be made by the SCST.

One of the Committee's four deputy chairmen is D.M. Gvishiani, Premier Kosygin's son-in-law, who handles all foreign relations in the field of science and technology. His office is a natural first stop for most Western businessmen, reportedly incurring the wrath of Foreign Trade Ministry officials who believe that some of their functions have been usurped. Gvishiani's prestige has grown with the importance of his office, making him an outspoken advocate of scientific-technical cooperation with the West. In a recent *Pravda* article, he justified Western equipment and technology imports as a way "to improve the living standards of the people living under socialism." He also co-authored an article with a Colonel Bondarenko in the Soviet military newspaper *Krasnaya Zvezda* which sought to persuade skeptics that increased trade with the United States "insures considerable advantages for both countries."

The *economic ministries* have a clear vested interest in the import of Western technology, especially those ministries that are expected to shoulder the main burden of growth. This growth must now come from increased productivity rather than from additional inputs of capital and labor, meaning that more advanced technology must be found. According to Academician O. Bogomolov, writing recently in *Pravda* on the importance of expanding economic ties, "a characteristic of the Soviet Union's import policy is the purchase of equipment for those sectors of industry which will develop rapidly in the five-year plan." He identifies those sectors that have benefited most from imported equipment as the chemical, metallurgical, automotive, pulp and paper, light and food industries, the merchant and fishing fleets, and the railroads. The computer, electronic, petroleum, and livestock sectors may be added to this list as future beneficiaries if current negotiations with the West are consummated.

Ministry officials have been acutely aware of a wide technology lag behind the West and have viewed the import of Western technology and equipment as a short cut to boosting productivity and fulfilling state plans. *Since the leadership has given the green light to such ties, the Soviet ministerial bureaucracies have unabashedly courted Western firms.* During a recent trip to the USSR by US chemical industry representatives, for example, the Soviet Chemical Industry's chief of science and technology presented the visitors with a shopping list of 13 needed chemical technologies. The minister of another priority sector, the petroleum industry, recently admitted to Western visitors that Soviet oilfield technology is

about 10-15 years behind current US know-how and equipment. He concluded that they must acquire foreign assistance if the country's increasing needs for energy are to be met.

In an effort to speed the introduction of new technology into Soviet industry, the *civilian R&D sector* was restructured by 11 decrees issued between September 1966 and December 1970. Basically, this reform sought to tie the "economic incentives and material rewards" of research institutes to the economic effectiveness of the new technologies which they developed. One of the decrees defined the rights and duties of each R&D organization, specifically including a responsibility for submitting recommendations to obtain promising foreign licenses and supplies. In a more general sense, all R&D organizations were tasked with "engaging in scientific-technical cooperation with foreign countries in order to solve important branch and inter-branch problems."

These new duties, which are now a part of the institutes' success criteria, should give them a vested interest in obtaining Western technology. So far, however, it has been difficult to determine if any foreign contracts have resulted from the new regulations.

In 1973 a Party-government decree declared that the *production association* would become the basic Soviet industrial unit by 1975. A production association unites a number of enterprises which use similar production technology or manufacture similar products, mainly for the purpose of exploiting economies of scale and putting new technology into use more quickly. Most of the associations formed to date have included research institutes under their umbrella. This new industrial unit should allow the more efficient use of foreign technology and would have more power to agitate for such at the ministerial level.

It has been rumored for some time that very large enterprises will eventually be given the right to engage directly in foreign trade. Some East European enterprises already have this right. Such a reform would place a greater initiative in the hands of Soviet technical and managerial personnel, *giving them a strong vested interest in maintaining trade with the West.*

14. Is Brezhnev likely to encounter trouble from his colleagues if the large deals with the United States fall through? If so, what would be the likely political results?

Brezhnev's personal prestige seems directly involved in large, joint economic ventures with the United States. How much trouble he will be in if all the big joint projects – for instance the exploitation of Siberian natural gas – fall through will depend in part on how successful he is in arranging alternative or comparable deals with other countries such as Japan and West Germany. [

] Brezhnev was eager to get the Germans on board in participating in the Kursk iron and steel project at whatever cost, and that his reasons for doing so were strictly political. He wanted to have something tangible in hand.

If all the joint ventures fall through, and there were no progress in other areas of detente, Brezhnev's position in the leadership would to some degree be weakened and he would surely be put on the defensive. This would probably mean less flexibility in Soviet foreign policy, less willingness to compromise or be accommodating on other issues. Judging from his past behavior, Brezhnev could be expected to trim on detente policy at least temporarily.

It seems *unlikely*, however, that *Brezhnev would be toppled* from leadership in these circumstances, unless he encountered at the same time major setbacks on the domestic front. In the first place, *his political support is broadly based*. His preeminence within the leadership seems now to be generally accepted by his colleagues. Personal ambition, lingering bad blood over past political defeats, and policy differences are all tempered to some extent by the recognition that Brezhnev's greater international prestige enhances the prestige of the USSR as a whole.

In the second place, *it would not be easy for any of Brezhnev's colleagues to exploit any vulnerability of his* stemming from even serious detente setbacks. Brezhnev might, of course, be faulted for allegedly mishandling the policy, for banking too much on personal diplomacy because of the enhancement of his own position, and for having overstressed glamorous and grandiose deals. Critics taking this line might get some tacit backing from Suslov, because of his ideological concerns, and from Kosygin, who has lost ground as Brezhnev has gained. Both Suslov and Kosygin appear concerned to maintain their influence over Brezhnev, however, rather than to remove him. There is also the larger problem of finding a viable foreign policy alternative to controlled detente.

Furthermore, the *most outspoken critics of detente* have been removed from *positions of power*, such as Leningrad party boss Tolstikov and Ukrainian party boss Shelest. And the remaining critics of detente within the leadership seem mostly to be in Brezhnev's own political camp, in the so-called "Ukrainian group." Political allies such as Kirilenko, Podgorny, and Polyansky have never been out in front

in support of detente and have come around with some reluctance. This may have caused some strain in their relations with Brezhnev and they might not be unhappy to see detente falter, but it seems unlikely that they would feel inclined to use a setback in detente as a political weapon against Brezhnev.

It is also questionable that a challenge to Brezhnev by some leadership colleagues could get sufficiently broad support among important regional and institutional groups. Brezhnev has sought to win over conservative regional critics of detente by lending his name to some of their pet local schemes. This goal appears to have been a major factor in Brezhnev's support of the experiments in industrial and agricultural management carried out by the Leningrad and Moldavian party leaders. Even Brezhnev's recent announcement of an ambitious agricultural program for the northwestern non-black-soil region of the Russian Republic may have had the same political motive. In addition to the present validity of the project on economic grounds, it should have strong appeal to conservative, isolationist Slavophile elements, who tend to take an emotional view of the region as the neglected "heartland" of "Mother Russia."

Brezhnev has also always kept an attentive ear to the needs of the military and has been careful not to leave his flanks exposed to attack from any such powerful dissatisfied quarter.

Brezhnev in the past has also been careful to combine a policy of relaxing international tensions with tight internal controls, and has apparently succeeded in containing fears of the ideological dangers of detente.

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V. THE DURABILITY OF CURRENT ECONOMIC POLICY

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15. Do the Soviets view their present policy as a temporary expedient which will be followed, in a later phase, by a return to greater independence?

Self-sufficiency always has been a Soviet policy goal. This policy was formulated when the USSR was a Communist island in a capitalist sea. The capitalist encirclement syndrome was carried into the post-World War II period and extended under Stalin to include the other Communist countries. Selective imports from the developed Western countries were designed to foster, not supplant, self-sufficiency. In the 1930s the USSR expanded imports from the West, only to reduce them a few years later when the leadership believed that the goal had been largely achieved. Trade with the capitalist West increased following Stalin's death but not substantially, and there was no indication that the goal of Soviet self-sufficiency was in any way being repudiated.

The *capitalist encirclement doctrine was eliminated as a major obstacle* to expanded trade with the West under Khrushchev *following the 20th Party Congress* in 1956. Officially, trade with the West was to be conducted basically to keep abreast of Western technology, to "overtake and surpass the capitalist West," i.e., to import or otherwise obtain Western technology and equipment for upgrading the Soviet economy. The goal of self-sufficiency was the same; only the slogans were changed.

By the late 1950s, however, Khrushchev recognized that plan goals could not be met without Western help, and increased trade with the West was to give the Soviet Union the opportunity for "quicker fulfillment of its program," in spite of Khrushchev's claim that fulfillment could be accomplished "through our own efforts ... our own resources."

Since about 1950 there has been a *more or less steady*, if unspectacular, *growth in trade with the West*. Imports have been focused largely on machinery and equipment, and from time to time substantial imports of grain have resulted in large increases in trade. But Soviet trade with the West has increased more rapidly than trade with the Communist countries, and in recent years the USSR has counted on the West for about one-fourth of its imports. Thus, this rather significant trade has become a more or less permanent feature.

The detente atmosphere has created the impression that the recent increases in trade are a new phenomenon. What is new about the current policy of importing Western technology is the *scale of imports* and the *larger share that is being bought in the United States*. Imports of machinery and equipment from the West were about \$1 billion annually in 1971 and 1972. They may reach \$2 billion in 1975. Assuming sufficient Soviet wherewithal, such imports could reach \$5 billion annually by the end of the decade, if the USSR chooses to rely more heavily on the West for its equipment and technology needs.

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Thus, although the Soviets may not have decided to rely on some sort of international division of labor, the increased exchanges with the West suggest that *it will be increasingly dependent on Western technology and capital*. Even if the USSR really perceives increased trade with the West as a means of increasing self-sufficiency, such a goal would be -- as it has been -- more difficult to attain with the passage of time.

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16. What problems is the USSR likely to encounter in importing Western technology? Will the leadership adjust its course if assimilation of new technology proves to be more difficult than expected?

There is already ample evidence that imports of Western technology often fail to meet Soviet expectations. Western businessmen have remarked from time to time that *the Soviets seem to be overly optimistic about what Western technology and equipment can do for them* and consequently there will be disappointments. Frequently, imported equipment does not mesh well with existing Soviet equipment, with other foreign equipment, or with Soviet inputs within a production process. Soviet difficulties often stem in part from a tendency to import equipment that is too advanced for rapid assimilation, given existing levels of domestic technological development. Assimilation of foreign technology also depends on the quality of the labor force. Soviet workers must first master the unfamiliar and complex foreign machinery; therefore, many foreign-built plants reach rated capacity only after lengthy delays.

Because of problems in digesting imported technology piecemeal, the USSR has turned increasingly to the purchase of turnkey plants. Turnkey plants have not proved to be a completely satisfactory answer to the USSR's difficulties with foreign technology, however, because they are too expensive to buy on a massive scale and because they do not resolve all of the interface problems. The Western plants often require labor skills in construction and operation that exceed the skills available on site in the USSR. In addition, the processes sometimes demand raw and semi-finished materials of a quality that the domestic economy is not prepared to supply.

Finally, problems may be caused by the Soviets' *relative lack of experience in managing large complexes of very modern technology*. Soviet managers have been trained to concentrate on meeting narrowly defined production goals in an organizational environment that does not promote the coordination of many complex parts. Western corporate management has invested heavily in specifically training middle-level managers in problems of complex organization before advancing them to higher levels. The Soviets have displayed interest in importing these management techniques.

Soviet expectations from these infusions of Western technology may differ from sector to sector, and there may be significant changes in policy in certain sectors resulting from experience with imports to those sectors. The Fiat-built plant at Tol'yatti produces the Zhiguli automobile. Its completion was behind schedule, but it produces a car superior to what the Soviets could do on their own. By the same token the Kama plant already is about two years behind schedule, but the Soviets probably would do worse without Western help and turn out trucks less efficiently. Again, in the chemicals field, the Soviets have spent about \$2 billion over the past decade or so to upgrade their chemical industry. They have succeeded

in doing so. The plants are producing more slowly than the Soviets have hoped and many of them have and will reach a plateau of output well below their rated capacities, but the alternative would be a lesser one.

Continued on-site presence - after plants begin production - *of Western technicians and managers would alleviate some of the problems* the Soviets currently face in operating high technology plant and equipment imported from the West. Many Fiat engineers and technicians stayed on for some time at Tol'yatti. This assistance would be maximized, moreover, if the Western firms were given a vested interest, e.g., equity participation, to ensure the efficient operation of these plants. The Soviets are not yet prepared to make such an ideological compromise, however.

On economic grounds alone, we do not visualize a situation in which the Soviets will decide to cut back sharply on imports from the West because expectations have not been realized. The amount of foreign exchange likely to be allocated in this decade to obtain Western technology and equipment is not a staggering amount, particularly in view of the fact that Soviet earnings will rise substantially for the next couple of years. The alternative of relying even more heavily than the Soviets do now on domestic and other Communist sources makes little sense economically. If the Soviets indeed decide to turn inward, they would do so for other reasons. What adjustments would be necessary would depend on what programs the Soviets had in mind. Many of the Siberian resource development programs would be postponed for long periods. Resources affected would include important ones such as oil, gas, and nonferrous metals. If the Soviets are serious about developing these resources, there seems to be little alternative to Western investment if they plan to exploit them in the next decade or so.

17. How has economic detente affected Soviet military capabilities? What is the potential in this regard?

Economic detente offers three sources of potential improvement in Soviet military capabilities. Some have argued that:

- Increased trade fostered by detente will help Soviet economic growth, thus providing a detente dividend that could be spent at least partly for military purposes.
- By furnishing medium- and long-term credits, the United States could free Soviet investment resources for military purposes and still allow the USSR to carry out planned projects in petroleum, chemicals, and minerals.
- Greater access to US technology might lead to qualitative improvements in Soviet weapons and materiel.

We do not believe that detente will help the military establishment by providing it with additional resources. Imports of Western machinery and equipment are only a small share of total Soviet investment in plant and equipment and therefore will not provide a significant growth dividend. Furthermore, to fill military requirements from resources freed from civilian industry would be a reversal of traditional Soviet resources allocation policy. Generous allocations have been made to military programs regardless of shortages elsewhere in the economy.

Detente is much more likely to improve Soviet military capabilities by raising the quality of Soviet military goods and by increasing the quantity of basic commodities such as trucks, petroleum, and communications equipment. The general problem is that practically all sophisticated technology – whether in the areas of automotive technology, electronics, electronic instruments, and metallurgy or in other industrial areas – has some potential application in military production. Large computers imported from the West would improve planning and supply in the civilian economy as well as in military logistics. If the USSR is successful in purchasing an aircraft factory from the United States, the quality of Soviet military aircraft is likely to improve. The air traffic control system for Aeroflot that the USSR is seeking would increase the efficiency of air defense systems as well as civil air transport.

This does not mean that military refinements to those technologies would be transferred to the USSR along with the basic civilian technology. For example, by buying integrated circuit technology, the USSR could improve the quality of communications systems generally. But the USSR would not gain access to the radiation-hardening process necessary to install integrated circuits in missiles. Nor would the acquisition of general US computer technology give the USSR the

capacity to manufacture highly specialized miniature computers for missile guidance. The purchase of an aircraft factory would not include US military avionics, radar, infrared systems, or flight recording systems.

Judging from the way US-Soviet commercial relations have developed, *detente thus far has not produced discernible transfers of military technology to the USSR.* Over the coming years, *however, detente probably will promote the transfer of military-related technology in the following ways:*

- The present inclination of the US Government and business is to approve rather than deny Soviet requests for technology. The USSR clearly is receiving machinery and equipment that was denied before detente.
- By the same token, detente will speed technology transfer to Eastern Europe, which is effectively a transfer to the USSR. The sale of integrated circuit technology by France to Poland, for example, will be of great benefit to the USSR.
- Technical cooperation agreements and scientific exchanges have encouraged technology transfer in general, although the precise impact on military capabilities is hard to assess. Soviet visitors are not shown uniquely military technology, but informal contacts with US military contractors could provide isolated assistance to the USSR in the production of military aircraft, computers, and high-performance metals.

In the short run, detente will undoubtedly enhance Soviet military capabilities in the support and logistics areas. Because of US and Western aid, the USSR and the Soviet military forces will have better trucks, more reliable communications, and an improved network for petroleum supply, as well as a number of other improvements that are embodied directly or indirectly in the equipment and technology delivered in normal trade. Nevertheless, *marginal improvements in transportation and petroleum distribution will not tip the military balance. What matters is the US superiority in particular high-technology fields that provide the foundation for strategic forces.*

The long-run effects of detente are difficult to predict as the channels of technology transfer could shift in various directions. If the relaxation of COCOM controls continues, the USSR will receive greater amounts of sophisticated industrial process technology that will permit continual quality improvement both in military and civilian production. US firms, desiring to expand their markets, will press for fewer controls. To the extent the USSR is successful in cultivating close, long-term contacts with US firms producing military equipment, the more successful it is likely to be in increasing military-related transfers.

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Substantial additional research and analysis would be required to go beyond these rather general observations on the long-term problem. We need to study in more detail whether Soviet acquisition of Western technology under detente could contribute to major advances in particular military systems such as highly accurate MIRVed ICBMs, improved ASW systems, or silent, nuclear-powered submarines. Circumstantial evidence, at least, suggests that certain Soviet military programs have been shaped or inhibited by various constraints including design difficulties and production limitations. In a few military applications the Soviets appear to have deliberately avoided using computers by adopting design concepts which do not require them.

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VI. LONG-RUN EFFECTS

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18. What can be said about the effects of economic cooperation, especially big projects involving large numbers of Westerners and increased foreign travel for Soviets, on Soviet managerial structures and procedures?

The long-run effects of economic cooperation on Soviet managerial structures and procedures could be transmitted through:

- Constant, prolonged contact between Soviet and Western managers,
- Soviet study of Western management techniques through exchange programs and visits abroad,
- Long-term management contracts let to Western management companies, and
- Western control of enterprises on Soviet soil.

The first and second of these seem the more likely sources of managerial impact. The third and fourth would raise serious ideological problems.

Large-scale economic cooperation is too new to serve as a meaningful guide to long-term effects on Soviet management. One of the biggest and oldest projects, the Fiat-equipped passenger car plant at Tol'yatti, has been under way since 1966 but became fully operational only last year. The Italian engineers and managers were phased out during 1973. Soviet ability to manage this plant or to transfer its Western managerial structure and procedures elsewhere has not yet been tested.

Many Western management techniques are hard to apply in the Soviet economy because they are designed to facilitate efficient, flexible decisionmaking in a market economy where rapidly changing conditions require quick decisions in the face of uncertainty and high risk. These techniques cannot be used or work less well in the Soviet managerial setting, where a large number of targets for output, labor payments, and other inputs are handed down from above.

The capitalist philosophy that underlies Western management techniques is not only ideologically unacceptable to Marxist economists in theory, but is not understandable in its practical ramifications to Soviet managers. Western visitors to the USSR have noted that the concept of marketing, a central feature of theories of management, is totally foreign to Soviet industrial officials. Similarly, US managers and teachers of business administration have no real understanding of day-to-day industrial management in the command economy with its central planning and Party domination of economic activity.

In 1969-70 the USSR expressed great interest in importing Western management techniques for use in the USSR, but this interest evaporated. By 1972

the USSR had broken off negotiations with Western management consulting firms, canceled a scheduled US-USSR management exchange program, and had stopped publishing extensive writings on the subject. *With the onset of detente* and the rapid increase in imports of Western technology, *interest in Western management techniques has revived somewhat* as the USSR continues to experience serious difficulties in assimilating Western technology.

Economic cooperation is bound to persuade many Soviet managers that the USSR's existing management practices are deficient. *Nevertheless, Western management techniques are likely to be adopted only on a piecemeal basis.* And they will be restricted in scope because of the limitations imposed from above. To enable the enterprise manager to maximize output at least cost while adhering to the targets sent down from on high, the manager can make use, for example, of computers for such things as inventory control, accounting, payrolls, process control, and solving a variety of production problems within his sphere of operation. The manager's freedom of maneuver is clearly limited, but some rationalization is possible even within the narrow confines of his operating unit. Other managerial techniques can be applied in the Soviet milieu without causing ideological conflicts or needing basic changes in the way the Soviets run their economy. Thus, US personnel placement practices or non-monetary incentives for workers can be applied. Where Western management practices are successfully implemented and adapted to Soviet practice, they can be disseminated by way of Soviet management schools.

The adaptation of Western management practices and theories to the Soviet setting by definition will exclude those features that would tend to undermine centralized government and Party control over the economic activities of the enterprise. The experience with the 1965 reforms, e.g., the continual amendments of the rules of the original reform to restrict enterprise managers' leeway for action, suggests that Western techniques that contribute to independent action by the enterprise manager would suffer the same fate.

19. What can be said about very long-run socio-political effects of economic cooperation -- especially big projects involving large numbers of Westerners and increased foreign travel for Soviets?

Any long-run socio-political effects of economic cooperation will be very difficult to identify, because they are likely to come slowly and be felt unevenly.

The *Soviet leadership itself will remain the most important determinant of the pace of change* in Soviet society. The authorities have considerable capabilities not only to retard change in general but to limit the impact of foreign economic relations on Soviet society in particular. Furthermore, economic cooperation with the West is only one of many factors, and probably not the most important one, that will influence the evolution of the Soviet political system in the years ahead. It will be difficult to look back and ascribe precise impact to any one of them.

Nevertheless, economic cooperation seems certain to reinforce liberalizing tendencies in the USSR. A beginning already may be seen in terms of economic development, political management of the economy, and general world outlook.

The economic basis for both the Soviet political system and the structure of the Soviet economy has been the need to marshal resources for defense and for rapid economic growth in a situation of extreme scarcity. To the extent that it aids economic growth, reduces chronic shortages, and contributes to the development of consumer industries and services, economic cooperation will soften the traditional approach.

Fiat, in building the automobile plant on the Volga, encouraged a Soviet commitment of resources to the consumer sector and aided the Soviets in taking a step in the direction of a consumer society on the Western model.

The massive import of US grain in 1972 and 1973 helped Soviet consumers to maintain an adequate diet and kept the Soviet livestock program on course as well. The leadership's response has not been simply to coast on the basis of such imports but to strengthen its commitment of resources to agriculture -- that is, to try to build on the level of living that the imports permitted to be maintained. This commitment is evidenced in the recently decreed program of agricultural development in the RSFSR.

An *increasingly complex* economy marked by growing plenty and attention to consumption is *less and less suited to the traditional methods of political management and control*. Khrushchev wrestled with the problem and sought to find an answer by turning the party into a society of specialists. This regime has reversed that approach, but its course threatens to leave economic decisions more and more to a managerial elite outside the party. Foreign economic relations, once they have become broad and routine, will directly enhance the operational role

and influence on decisionmaking of commercial and economic officials who must attend to them. Some Soviet leaders have in recent years expressed this anxiety in attacks on the idea that economic management is the business of a specialized managerial elite, operating according to theories and principles of business management, as in the West.

Finally, *economic cooperation will contribute to the erosion of the ideological and foreign policy rationales for the Soviet brand of absolutism.* The concept of the undying antagonism between the two world camps, socialism and capitalism, becomes harder to maintain in the popular mind in these conditions. Commerce with and borrowing from capitalists make it harder to use anti-bourgeois labels to protect the purity of doctrine and practice in all spheres of Soviet life. The populace will find more opportunity and freedom to turn its attention to material comforts and to developing a Western life-style, at least in its consumer aspects. The turn to detente has, in fact, been accompanied by criticism from some leaders of the development of bourgeois "consumerism" in the Soviet Union and the consequent loss of communist morality.

The connection between all of these tendencies, however, and their realization in practice is a very uncertain one. Soviet society underwent considerable transformations during Khrushchev's rule with little direct reference to detente, much less to foreign economic cooperation. In recent years the leadership has pursued detente and expanded economic relations abroad while reinforcing the defenses of the *status quo* in most areas of Soviet life. Factors such as foreign trade may be conducive to change and may thus make change more likely than it would be in their absence. The leadership still exercises enormous discretion in deciding how much change will or will not come, however. The present leadership has leaned toward the cautious side.

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