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Can the Soviets "Stand Down" Militarily?

An Intelligence Assessment

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June 1982

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Can the Soviets "Stand Down" Militarily?

An Intelligence Assessment

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This paper was prepared by
Office of Soviet Analysis. Comments and queries are
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Foreword

As the Soviet economy continues to deteriorate, more and more attention is being given to the notion that at some point the leadership might attempt to prop up the Soviet Union's faltering economy by shifting some resources from arms production to civilian end uses.

To be sure, there is no evidence that any resource shift is under way, or even that Soviet leaders are seriously contemplating one; the dominant feature of Soviet defense spending has been the persistence of its growth. Nevertheless, as economic problems mount—and as the struggle for leadership intensifies in Moscow—the possibility of a resource shift requires that Western policymakers have some grasp of the Soviet system's technical capacity to accommodate such a shift if, in fact, a decision of this sort were to be reached or even considered.

Apart from ideological imperatives, perceived national security needs, and the personal commitment of Soviet leaders to growing military power, the very structure of Soviet defense planning and production, which is vastly different from ours, contributes heavily to the momentum of defense spending in the USSR and makes any shift of resources out of the defense sector more difficult than would be the case in a market economy.

In the United States, the allocation of resources for the production of both guns and butter is carried out in the free market. Government's role is to allocate enough money to provide the minimum number of guns judged necessary to assure the national security. A political decision to expand or contract the US military sector, once reached, is implemented merely by raising or lowering the defense budget. The free market then reallocates resources, and it is an efficient mechanism for doing so. By contrast, the entire Soviet system—with its five-year plans, its comprehensive resource-allocation process, its command economy—is designed and managed by the government to provide a high priority to defense production. A political decision to alter the guns-vs.-butter ratio requires far more from the government than merely a budgetary adjustment: production plans must be changed; financial, material, and human resources must be reallocated; production must be rescheduled in government plants; and the actual goods and services that emerge must be given prices and assigned to customers—all by government officials.

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After briefly outlining the Soviet industrial structure, this paper examines the technical capacity of the Soviet Union to shift resources from military-related production to civilian end uses—*assuming a Politburo decision to attempt such a shift*. It examines the time that a significant resource shift would require and the impact of such a shift on the Soviet Union's economic performance and military prowess. After outlining the role of Western economic assistance in maintaining the Soviet Union's current resource allocation scheme, this paper discusses the difficulties that the US Intelligence Community would have in detecting and monitoring a resource shift from arms production to civilian end uses.

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Can the Soviets "Stand Down" Militarily?

Key Judgments

On the basis of observed military activity, we expect that Soviet defense spending will continue to grow 4 to 5 percent a year through at least 1985. Sustaining this policy over the long term will be increasingly difficult, however, especially if economic conditions worsen beyond our projections. Indeed, a new leadership by mid-decade will feel greater pressure to reduce the growth rate of defense expenditures to free up labor, capital, and materials—resources urgently needed in key civilian sectors

An absolute cut in defense spending on the order of 20 percent by 1990—a hypothesis discussed in this paper—could result in meaningful economic changes. A gain in per capita consumption growth of up to one percentage point a year would be likely, and there could be a moderate increase in the growth of GNP. We believe such an abrupt shift is highly unlikely in the short run. If it were made at all, it would be phased in gradually after 1985.

Absolute cuts would almost immediately free up raw materials and some semifinished goods such as high-quality steels, construction materials, chemicals, and fuels. These could help eradicate bottlenecks in such critical economic sectors as energy, agriculture, and transportation. Many military production facilities could begin producing goods for the civilian sector within a reasonable period of time. Capacity currently used in armored vehicle and tank production, for example, could be converted in roughly a year to support increased production of a broad range of civilian vehicles—for example, railway rolling stock, tractors, trucks, and construction equipment

Absolute cuts in military programs would probably impact most on theater air, naval, and land arms, possibly causing a major restructuring of missions and postponing replacements. The Soviet strategic forces could emerge relatively intact

The military would object strongly to a resource shift of this magnitude, but the objections would be manageable once the Politburo decision was final. (S)

The credit, goods, food, and technology provided by the West have helped Moscow maintain its current resource allocation scheme. If the West were able to deny or limit Moscow's access to these forms of assistance, pressure

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would be increased on the Soviet leadership to shift resources from arms production to the civilian economy. By curtailing the Soviets' import capacity—primarily by restricting credit but also by hampering their oil and gas production and thus their hard currency exports—the West would further raise the cost to the USSR of maintaining its present resource allocation policy.

It is, of course, impossible to say for certain that the Soviets would respond to Western pressure by shifting resources. However, it is important to note that in some instances they have deemed a shift to be in their best interests and have directed the military-industrial complex to support the civilian economy.



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Can the Soviets "Stand Down" Militarily?

The Soviet Industrial Structure

The Planning Process

Soviet military-industrial policy is established by a small group of senior officials, many of whom have long experience in dealing with defense issues. These officials are advised by the military and by several government agencies, which in turn formulate programs, plans, and budgets to implement policy decisions. Military programs are given considerable momentum by the vested interest of key officials, the policymaking and planning process itself, and resistance to change within the production system.

Key Officials and Organizations.

The ultimate decisionmaking authority resides with the Politburo, the chief executive body of the Communist Party. The Politburo includes the top officials of both the party and the government and considers the full range of domestic and foreign policy issues. Many of the important decisions on military-industrial matters, however, probably are made by the Defense Council, which is composed of the half dozen top party and government officials with national security responsibilities. With Brezhnev as its chairman, the Defense Council operates by consensus, so that members are collectively responsible for decisions. The Council of Ministers, which is in charge of the economy, elaborates policy decisions and is responsible for ensuring that the economy meets the military requirements approved by the Defense Council.

Policymaking bodies are served by a large number of military, party, and government organizations that are collectively responsible for the planning and oversight of military-industrial activity. Four of these organizations significantly influence policy decisions and exert primary control over their implementation:

- *The General Staff of the Ministry of Defense*, the main executive organ of the armed forces. It apparently serves as the secretariat for the Defense

Council—providing agendas, lists of attendees, and decision papers. It prepares threat assessments that are used to assess defense requirements, and it prepares and defends military plans for the procurement of weapons and related material.

- *The Military-Industrial Commission (VPK)*, consisting of the top executives of Soviet defense industries and a supporting staff. The VPK monitors the work of the nine defense industrial ministries and coordinates party and government decisions for the development of major weapon systems. It also closely monitors weapon programs, enforcing schedules and ensuring that technical and performance specifications are met.
- *The State Planning Committee (Gosplan)*, the national economic planning agency, is the final technical authority on the ability of the economy to meet overall military needs. It has a military-economic department—manned in part by officers from the General Staff—which coordinates with the civilian sectors of Gosplan and enforces military priorities in the economic planning process.
- *The Party Central Committee apparatus*—especially its Defense Industries Department. Central Committee departments help government agencies interpret policy decisions when plans and programs are prepared. These departments also maintain independent party channels reaching into all levels of Soviet military and industrial organizations, through which they gather information on compliance with the leaders' directives.

Officials from these organizations cooperate closely on military-industrial matters. They resolve conflicts through compromise or, failing that, through appeal to senior officials.

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The organizations that implement decisions—the military services and industrial ministries—influence policy through their special expertise and their control over information. The services originate requirements for new weapon systems, and each competes with the others for missions and resources. Military officers stationed at development and production establishments enforce military claims and maintain high standards of quality control. Officials of the industrial ministries have information on development and production capabilities that is not routinely available to the top leaders and planners.

Crucial positions at all levels in the military-industrial complex usually are occupied by officials with long experience in defense affairs. Brezhnev was responsible in the party for defense industrial matters before he assumed the leadership, and current Minister of Defense Ustinov has been a defense industrial manager since the 1930s. Frequently, key officials in planning and management agencies are recruited after successful careers in defense industry or the military, and sometimes they move between major agencies. Important military industrial managers usually have long tenure and wield considerably more influence in party and government channels than their civilian industrial counterparts.

Plans, Programs, and Budgets

Defense Plans. Soviet defense plans set forth the principal goals and lines of development for military forces. The 15-year perspective defense plans deal with broad goals rather than specific programs. The more detailed five-year and annual defense plans are prepared by the General Staff on the same cycle as the corresponding national economic plans. (The Soviet five-year defense plan is presumably reviewed and adjusted periodically, but it is not completely revised and extended each year as is the US Five-Year Defense Plan.) Gosplan and the VPK review the parts dealing with procurement of weapons and other military materiel before the plans are submitted to the Defense Council.

We believe the five-year defense plan contains:

- A threat projection that identifies foreign military strengths and weaknesses
- An analysis of current Soviet military capabilities

- A set of targets for improving the capabilities and meeting the threats.

The plan probably shows projections of military expenditures and manpower requirements and the share of national economic resources that will be required to fulfill the targets. This information would enable the Soviet leaders to assess in general the potential costs of their defense programs.

Economic Plans. The production needed to meet all civilian and military requirements, including those of weapon programs, is organized and directed by economic plans. Five-year and annual economic plans establish production targets, and annual plans allocate the material resources necessary to meet these targets. The economic planning process affords the best opportunity to assess trade-offs between military- and civilian-industrial claims, but the ability of decision-makers to make such assessments is limited by the planning procedures.

Gosplan and other agencies participating in economic planning do not have the technical capability to compare all potential resource applications when making plan assignments. Instead, Gosplan tends to allocate resources sequentially. In plan preparation, it takes care of military requirements first, relying on its military-economic department to develop the specific production and supply relationships within the defense industries. Once these requirements have been established, officials resist adjusting economic plans because each change requires further changes throughout complex networks of production and supply relationships. When plans must be adjusted, Gosplan tends to apportion available resources according to the priority of the user—again favoring the military.

The military also has several advantages in disputes with civilian interests. Because of the priority enjoyed by the military, civilian economic planning officials usually cannot effectively challenge specific military-industrial uses of resources. When they do attempt a challenge, the decision is usually governed by political rather than economic considerations. General Staff

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and other defense officials have wide access to civilian industrial plans. They participate and wield considerable influence in the resolution of disputes over resources.

These characteristics of the Soviet decisionmaking process impart considerable momentum to military programs. They limit the ability of civilian claimants (except at the highest levels of the leadership) to challenge the military's priority access to resources, and they promote a basic continuity in the development of Soviet military power.

The Production System

There are three types of industrial plants in the Soviet Union: those that produce primarily military equipment, those that produce military equipment plus a substantial amount of civilian equipment (called dual-use plants), and those that produce civilian equipment.

There are more than 1,000 production facilities under the control of the defense industrial ministries. The Soviets officially categorize nine of their 63 ministries as "defense industries" (table 1). Over 100 final assembly plants manufacture the bulk of major weapons systems. These production facilities are supported by several thousand producers of major components and combat support equipment.

Dual-Use Plants

Several hundred plants produce both military equipment and a substantial amount of civilian equipment. For example:

- The Kirov Plant in Leningrad is the Soviets' largest producer of marine gas turbine engines, supplying the GTU-20 turbine for civilian freighters and the TV-12 turbine for submarines. It also produces the T-700 heavy tractor for Soviet agriculture and is the prime developer and prototype producer for the T-64 tank. According to one former plant employee, the T-700 tractor line can be converted to tank production within 48 hours.
- At least one submarine building yard produces pipe to transport oil and gas.

- Kazan Aviation Plant 22 (producer of the Backfire bomber) also produces the IL-62 civilian transport aircraft and has produced some consumer goods.

Dual-use plants fall under the control of their respective industrial ministries. Tank plants are under the Ministry of Defense Industry, while shipyards are under the Ministry of Shipbuilding Industry. Soviet organization and bookkeeping practices do not single out dual-use plants for unique forms of control.

Civilian products made at defense plants may or may not be the same products made in civilian industry:

- Electronic components generally are not produced outside of the Ministry of Electronics Industry--a "defense industry." Thus there is no civilian industry available for comparison. Many of the types of computers made by the Ministry of Radio Industry (MRP) are delivered to both military and civilian customers and have no identical counterpart made by the civilian Ministry of Instrument Making. The Kazan Computer Plant of the MRP is the sole producer of the ES-1030 computer. Although its development and entry into production were under the aegis of the VPK, the ES-1030 has been produced for both civilian and military customers.
- The Ministry of Defense Industry produces the same type of rail cars, locomotives, turbines, and steel as the civilian ministries of Transport Machine Building, Power Machine Building, and Ferrous Metallurgy. For example, Nizhniy Tagil Plant 183, the producer of the T-72 tank, also makes rail cars very much like those produced at civilian plants in Dneproderzhinsk and Kaliningrad.

The quality and cost of civilian production at defense plants may differ from those of similar production at civilian plants, depending on several circumstances:

- Consumer goods produced at defense plants as a small sideline have a reputation for greater reliability and quality than identical products from civilian plants. This is probably because defense plants temporarily divert some sophisticated machinery

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Table 1

Principal Military-Related Product Lines of Selected Industrial Ministries in the USSR

Defense Industrial Ministries	
Ministry of the Aviation Industry	Aircraft, aerodynamic missiles, spacecraft, air-to-air missiles (AAMs), defensive missiles (both tactical and strategic), tactical air-to-surface missiles (ASMs), and ASW missiles.
Ministry of General Machine Building	Liquid- and solid-propellant ballistic missiles including submarine-launched (SLBMs), SLBM fire control systems, space launch vehicles (SLVs), spacecraft, and surface-to-surface cruise missiles.
Ministry of the Defense Industry	Conventional ground force weapons, mobile solid-propellant ballistic missiles, optical systems, antitank guided missiles (ATGMs), tactical surface-to-air missiles (SAMs), lasers, and ASW missiles.
Ministry of the Shipbuilding Industry	Naval vessels, naval systems, mines, torpedoes, submarine detection systems, naval acoustic systems, and radars.
Ministry of the Radio Industry	Radars, communications, navigation equipment, computers (special purpose), guidance and control systems, and lasers.
Ministry of Medium Machine Building	Nuclear weapons and high-energy lasers.
Ministry of Machine Building	Conventional ordnance munitions, fuzing, and solid propellants.
Ministry of the Electronics Industry	Electronics parts, components, and subassemblies.
Ministry of the Communications Equipment Industry	Communication equipment, radar components, electronic warfare (EW) equipment, military computers, and facsimile equipment.
Other Key Defense-Related Industrial Ministries	
Ministry of the Automotive Industry	Trucks, armored personnel carriers, and heavy equipment transporters.
Ministry of Heavy and Transport Machine Building	Armored vehicles, diesel engines, and generators.
Ministry of the Electric Equipment Industry	Batteries, electrical components, communications equipment, radar components, and biological/chemical warfare detectors.
Ministry of Instrument Making, Automation Equipment, and Control Systems	Computers and instrumentation control systems.
Ministry of Power Machine Building	Generators.
Ministry of the Chemical Industry	Fuels, fiberglass components for rocket motors, propellants, chemical warfare materials, and plastics.
Ministry of Tractor and Agricultural Machine Building	Tanks and tracked vehicles
Ministry of the Petroleum Refining and Petrochemical Industry	Tires, rubber, fuels, and lubricants

and manpower usually used on military programs. Published Soviet data suggest that unit costs are significantly higher in the defense industries than in the civilian industries because of the higher wages and overhead charges in the former.

Where a large portion of a defense plant is dedicated to producing durables such as railroad cars, the machinery and manpower involved is generally tailored to the requirements of that program. At

Kharkov Plant 75, the same foundry that casts engine blocks for the T-64 tank also casts engine blocks for diesel-electric locomotives. To the extent that the civilian products of a dual-use plant share some of the labor, workshops, and production processes of the military products, the quality and cost of the civilian product could be higher at the defense plant than they would be at the civilian plant.

Civilian Plants

There are at least 20,000 plants in the Soviet Union that produce civilian-sector equipment. These plants are under the control of their respective civilian ministries. Many of these civilian plants, however, have special production lines for military equipment. Some of these lines are idle but maintained at a state of readiness as part of the Soviets' mobilization program.

Potential Resistance to and Support for Any Shift of Resources From Military Production to Civilian End Uses

Sources of Resistance to a Resource Shift

Ministry of Defense and the Armed Forces Chiefs

Proposed resource shifts from the military to the civilian sector would be strongly debated by the military, but once the Politburo made a decision, residual resistance could be worked out between civilian and military authorities. The military establishment would be most concerned about the loss of weaponry that would ensue from the shift. Its opposition would be reinforced by the realization that plant and equipment in place in the Soviet command economy acquire a strong inertia that is hard to reverse. Once dedicated to civilian products, converted establishments would tend to remain in that field. The battle between the services over the allocation of cuts would probably be intense but would be largely contained within the Ministry of Defense.

Defense Industries

While the defense industries would not suffer the absolute losses experienced by the military, their executives might feel their careers threatened by the shifts and by requirements to meet new schedules and performance targets. They also would probably be concerned about the disruption of selected networks of contractors and subcontractors devoted to specific types of weapon systems.

The Incentive System

The Soviet system of targets, bonuses, and rewards that attempts to stimulate productivity would place initial roadblocks in the way of shifting resources from armaments production. Schedules and targets necessarily emphasize short-run achievements. Disruptions caused by a resource conversion program could mean some drop in bonuses, and both workers and managers would resist changes. In the long run, however, once the resources began to be employed effectively and new targets and bonuses were instituted, their objection to resource shifts could weaken.

Sources of Support for a Resource Shift

Gosplan

Gosplan's role in providing guidance and managing the resource flow for a significant shift would be important. Management of the thousands of supply and demand balances would have to be efficient in order to minimize the ensuing disruptions and to lessen constraints because of the cuts. Planners of the civilian economy, however, would welcome the opportunity to have additional resources at their disposal.

Civilian Industries

The civilian beneficiaries of a resource shift would support the Politburo's policy because it would provide resources needed to eliminate bottlenecks and improve economic performance. Moreover, a shift of resources would give the civilian industries more clout—including, perhaps, greater representation on the Central Committee.

Capacity of the Soviet System To Shift Resources

The pace of conversion would be determined in large part by the nature of the planning system. Changes made in annual plans would probably be restricted to

raw material, semifinished goods, and current production of the most readily convertible product lines. Other conversions would have to be prepared in the context of annual plans, as dramatic changes in the middle of an annual plan would cause disruptions that would outweigh the value of the small amount of time gained.

Most fundamental shifts in facility use, tooling, and capital investment would probably be made in the course of staffing out the next five-year plan. If the Soviets sought to make these shifts too quickly, the result would be short-run waste and disruptions to the economy. For example, the Soviets reprogrammed more than 17 billion rubles for the chemical industry in the last three weeks of preparation for the 10th (1976-80) Five-Year Plan. The resulting disruptions and schedule failures only succeeded in earning the responsible minister an official party reprimand.

In our judgment, the Soviet system is sufficiently flexible to shift enough resources from military to civilian production to translate into a 10-percent reduction of the defense budget in roughly three years and a 20-percent reduction of the defense budget in roughly eight years without large-scale economic reform. For example:

- A wide variety of materials could easily be transferred from the military to the civilian economy. These include high-quality steels, nonferrous metals, construction materials, chemicals, and fuels.
- A large portion of the electronics and radio industries could be immediately converted from military production. Microcircuit development and production facilities within the Ministry of Electronics Industry could continue to produce the same advanced electronic components for use in civilian equipment. The same is true for computers and many types of radios.
- Other dual-use production activities could be redirected to civilian uses with some redesign of products. Aircraft and shipbuilding facilities could retool within roughly a year for their respective production of transport aircraft or heavy-lift helicopters and such ships as tankers and freighters. Capacity currently used in armored vehicle and

tank production could be converted in roughly a year by replacing jigs and fixtures to support increased production of a broad range of civilian vehicles. These could include tractors, medium trucks, heavy mining and construction equipment, diesel-electric locomotives, and railcars.

Most dual-use production facilities would require some major retooling. The essential skills and machinery used in foundry, forging, and machining operations would be retained, however. Little manpower retraining or capital construction would be required.

The rate of conversion of dual-use production facilities would depend on the demand within the Soviet economy and its ability to absorb the increased output quickly and efficiently. The Soviet economy could put to immediate use railroad rolling stock and trucks to overcome bottlenecks in transportation. While the demand for computers and other civilian electronics is great, the Soviets suffer from inefficiencies in the actual use of this equipment. Thus increased deliveries to civilian industries of computers, for example, would probably not yield a corresponding improvement in industrial productivity.

Individual missile and munitions development and production establishments might have to be idled after conversion to civilian production. At a minimum they would require far more capital construction, machinery, and labor retraining than would the dual-use production facilities. As a bonus, however, the Soviets would be able to phase out inefficient facilities, thereby raising the overall efficiency of the defense industry. The basic machine shops might form the nucleus for a different civilian production program, but much of the highly specialized fabrication, assembly, and testing operations in missile, nuclear weapons, and munitions factories would have to be discarded.

If the conversion program is driven by the need to strengthen particularly critical civilian activities (rather than to find a useful role for existing defense plants), technical requirements could force significant

"upstream" changes in capital and operations. For example, major changes in capital equipment would probably be required before assets in the defense industries could contribute to the production of energy-related equipment such as drilling rigs, platforms, or pipe. High-temperature components made by the aircraft industry could more readily contribute to the production of compressor equipment for the gas pipeline projects. Increased production of turbines and transformers for electrical power would also require shifts of skills and machinery to the civilian electrical equipment producers from the defense industries.

Even though the conversion of facilities not "dual-capable" would involve the sacrifice of machinery, the materials used by these facilities could be redirected to alternative civilian production with greater ease. Conventional materials such as steel, basic chemicals, and aluminum could be reallocated immediately to alternative civilian uses. Powder metallurgy used in the production of munitions could be redirected to the production of drill bits for petroleum extraction. This would involve little change in the manpower, machinery, and facilities used in the preparation of materials. Limitations in demand would probably only affect the redirection of truly exotic materials unless, for example, civilian space exploration was also a beneficiary of the redirection of resources.

Where manpower would have to be shifted, features of Soviet industrial practice suggest that extensive retraining would not be necessary. The Soviet use of general purpose machine tools and a high degree of standardization in much of the production of weapons systems facilitates the direct use of defense industrial labor on the same processes for civilian goods. Where defense industrial manpower would have to shift to new civilian processes, the higher skill levels found in the defense industries would minimize the retraining required--though at a sacrifice of some skill levels.

The transferability of military research and development personnel and facilities to civilian tasks would vary from industry to industry somewhat in the same fashion as production facilities. The more exotic the R&D effort, the more difficult it would be to convert the resources productively. For example, a physicist working on nonacoustic ASW sensors probably would need a period of acclimatization before becoming

productive, and the laboratory equipment and materials in his facility might be of little use to the economy. On the other hand, an electronics engineer who designs circuitry for missiles could adjust fairly easily to work on numerically controlled machine tools—an area of backwardness for the Soviet machine tool industry.

A resource shift along these lines is unlikely either to require or to precipitate a fundamental reform of the Soviet economy. In fact, it might ease pressures for reform, since the transfer of resources would relieve some tautness in the economy. On the other hand, the post-transfer period might be a propitious time for reform, since reforms are more easily implemented when an economy is relatively free of strains.

Economic Impact of a Resource Shift

The impact on overall economic growth would probably be moderate, but the redistribution of resources implied by a 20-percent cut in defense spending could have a sizable impact on per capita consumption. We have examined the impact on GNP and per capita consumption using four different assumptions with respect to labor and capital productivity and energy availability. The increases in GNP growth by the end of the decade vary from around 0.2 to 1.2 percentage points, depending on the amount of productivity assumed for the released defense resources. Our judgment is that a gain in GNP growth in the range of 0.2 to 0.5 percentage point is most likely. The ultimate effect of lower defense spending on the Soviet economy would be an increase in availability of goods and services for household consumption; a gain in per capita consumption growth of up to 1 percent a year appears likely. Further details on the four cases considered in this analysis are presented in the appendix.

The greatest and most immediate impact of a defense cut and the resultant resource shift would occur at the microeconomic level.

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Eradication of Bottlenecks

The resources most readily transferable—high-quality steels, construction materials, chemicals, fuels—are some of the ones most needed to alleviate or eradicate bottlenecks in such critical economic sectors as energy, agriculture, and transportation.

In the energy sector, increased availability of steel for drilling rigs and tubular goods, as well as specialty steels (for example, powder metallurgy now used to produce munitions) for drill bits, production equipment, and submersible pumps, could slow the imminent decline in oil production and help the Soviets meet their gas output targets. In addition, special steels for the manufacture of turbine blades could increase the reliability of gas turbines used to power electric generators and pipeline compressors. Concrete, asphalt, and other construction materials would help to overcome the serious lack of infrastructure (all-weather roads, housing) in crucial areas of energy development such as West Siberia. Transfers of fuels, particularly petroleum products, from the military would also ease production bottlenecks.

Soviet agriculture would benefit from infusions of specialty steels to increase the availability of certain agricultural equipment. Chemicals for fertilizer and pesticides could increase production of food and industrial crops.

The transferred materials turned into producer durables could be used to improve the transportation network. The transportation sector's most serious bottleneck is insufficient railroad rolling stock. Special high-strength steel is the key material which could be transferred for the manufacture of railroad cars (wheels and axles). Much of this equipment is produced in dual-use facilities that also manufacture military vehicles, tanks, and other hardware. An increase in rolling stock would go a long way in solving distribution problems plaguing innumerable sectors of the Soviet economy by boosting delivery of grain, lumber, fuels (especially coal), and other needed materials and semifinished products. The highway network also could be improved by the infusion of roadbuilding and grading equipment.

Examples of other, less critical commodities that could be quickly diverted from military to civilian application include synthetic rubber (for tires and drive belts), aluminum (for construction, machine building and metalworking, and high-voltage power lines), and ferroalloys, particularly tungsten and nickel. Advanced plastics, fibers, and rare metals would undoubtedly serve civilian requirements as well.

Factor Productivity

Reallocating resources from defense to civilian uses could stimulate lagging factor productivity—the efficiency with which labor and fixed capital are used. First, the freed resources might well go into higher quality machinery and equipment, which is crucial to any rise in productivity. Second, to the extent that some of the released goods and services were immediately devoted to increased production of consumer goods, the morale of the populace might be improved, with beneficial effects on labor productivity.

Though it would increase total civilian output, a simple increase in investment in the civilian sector unaccompanied by improvements in technology and customer use might not lead to improved productivity. Computers inefficiently used would not yield dramatic improvements in industrial productivity.

Rate of Innovation

A transfer of military R&D resources to the civilian sector could improve the current slow rate of innovation and technological change, which has seriously impaired Soviet economic growth. Modernization could also be enhanced if released resources went into exports, which in turn would enable the Soviets to increase their hard currency purchases of certain Western equipment and technology.

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The Military Costs of a Resource Shift

Table 2 illustrates our best assessment of how the cuts might be allocated across different resource categories, assuming a decision by the leadership to make the cuts roughly proportional to total military expenditures.

The categories of procurement and research, development, testing, and evaluation (RDT&E) are roughly two-thirds of Soviet defense costs and would thus bear the brunt of reductions. Substantial cuts in the other categories could be made by 1985, but their contribution to overall economic improvement would not be significant, and overall they might do more harm than good. Debates on where to make the cuts might involve the following:

- With a reduction in RDT&E, development of weapons that did not show near-term promise would be slowed or halted by 1985. Work on systems already well along would continue, but, as they eventually were deployed, the pace of research on successor systems would be slowed. Exotic research on areas with speculative payoffs probably would be halted. Even by 1990, however, there would be sufficient resources to continue major, though scaled back, R&D on systems that show promise.
- Ships and aircraft account for about half of procurement, and their production would probably have to be greatly cut back to achieve the assumed savings. Cutbacks in armored vehicle production would not provide substantial savings, but the resources could be transferred relatively easily and could be used to alleviate major bottlenecks in the Soviet economy.
- Operations and maintenance are a small part of the services budgets. National command and support functions consume about one-third of all O&M, but they would probably be relatively immune from cutbacks, thus limiting even further the scope for cuts in this category.
- The assumed 2-billion-ruble cut in personnel costs corresponds to a reduction in manpower of 1 million men. Total uniformed military manpower currently

Table 2 Billion 1970 Rubles

Assumed Reductions in Soviet Defense Spending

Resource Category	1982 Spending Estimate	10-Percent Overall Cut by 1985	20-Percent Overall Cut by 1990
Research, development, testing, and evaluation	19	-1.5	-4.0
Procurement	36	-4.0	-7.0
Operations and maintenance	11	-1.0	-2.0
Personnel	9	-1.0	-2.0
Construction	3	-0.5	-1.0
Total	78	-8.0	-16.0

makes up only 3 percent of the working-age population. Thus, a reduction of 1 million men could be of some, but not a major, help to the economy.

- Military construction is likewise a small part of the Soviet defense budget. The contribution of these resources to the civilian economy would probably be small but could be useful in freeing construction material and equipment needed for Soviet agriculture and energy

Within the resource categories of RDT&E and procurement of military hardware, the choice of which forces to cut would depend almost entirely on Soviet perceptions at the time the Politburo decision was made. Based purely on economic rationality, choices might be made on the following grounds:

- Facilities for conventional weapons production would be most easily converted. Many shipyards and plants producing naval ships and armored vehicles are dual-use facilities which already have civilian product lines. Moreover, nearly all plant space

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tooling, materials, and manpower in these facilities are suitable for civilian ships or vehicles. Many plants now producing military aircraft also produce, or have produced, civilian aircraft.

- Facilities for the production of strategic weapons probably would be more difficult to convert than those devoted to conventional weapons. Plants producing strategic weapons use highly specialized processes and tooling, generally dissimilar to those for civilian products. Nevertheless, some manufacturing and fabrication capabilities could be used for products such as refrigeration equipment, and conversion would release energy and critical products such as high-strength steels for uses such as turbine components and cutting tools. In addition, the quality resources (manpower and equipment) used in R&D for strategic weapon programs could be used to increase the technical level of some sectors of the civilian economy

Conclusions drawn from cuts based on military imperatives are largely compatible with those based on economic rationality. A simulation exercise conducted by intelligence analysts and a panel of experts in 1980 sought to rank the programs most likely to be affected by one of several budget reduction scenarios, based solely on their relative military usefulness to the Soviets. It was concluded that an absolute reduction in defense expenditures would require a restructuring of roles and missions of general purpose forces, but would have a more limited impact on Soviet strategic force structure and capabilities. The most destabilizing strategic systems—such as the SS-18 heavy missile program and an invigorated ABM program—would remain essentially intact

Within the ground forces, lower weapon production rates after several years would begin to degrade the operational readiness of Soviet forces and to affect modernization programs. The average age of equipment in unit inventories would increase, resulting in a greater maintenance burden. (Even at current production levels, the average age of Soviet naval ships is increasing.)

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The Role of the West in the Current Allocation Scheme

It is now recognized that a key element of the Soviet leaders' ability to keep their country's faltering economy going has been help from the West in the form of credit, goods, and technology. Dissatisfied with the nation's economic performance but unwilling to improve it quickly through a far-reaching program of domestic reform, Moscow has sought relief through East-West trade and technology transfer. In particular, Moscow has sought help in:

- Raising the technological level of Soviet fixed capital.
- Relieving industrial supply bottlenecks.
- Increasing living standards.

Accordingly, imports of machinery, ferrous metals, and foodstuffs have dominated Soviet-Western trade (table 3):

Although the USSR has had difficulty in assimilating the equipment and technology acquired from the West, imports from the West unquestionably have helped the USSR deal with some critical problems, particularly in certain manufacturing sectors:

- In the 1970s, imported chemical equipment, accounting for about one-third of all Western machinery purchased by the Soviets, was largely responsible for doubling the output of ammonia, nitrogen fertilizer, and plastics and for tripling synthetic fiber production.
- The Soviets could never have accomplished their ambitious 15-year program of modernization and expansion in the motor vehicle industry without Western help. The Kama River truck plant, which was based almost exclusively on Western equipment and technology, now supplies nearly one-half of the Soviet output of heavy trucks.
- Large computer systems and minicomputers of Western origin have been imported in large numbers (1,300 systems since 1972) because they (a) have capabilities that the Soviets cannot match, (b) use complex software that the Soviets have not developed, and (c) often are backed up by expert training and support that the Soviets cannot duplicate

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Table 3
Soviet Hard Currency Imports

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Million US \$										
Total	2,943	4,157	6,547	8,448	14,257	15,316	14,645	16,951	21,585	26,017
Grain	185	770	1,423	509	2,323	2,627	1,354	2,360	3,279	4,360
Other agricultural products	475	423	933	1,273	1,533	1,458	1,836	1,478	2,287	4,400
Machinery	960	1,282	1,739	2,334	4,593	5,074	5,114	5,969	6,028	6,039
Rolled ferrous metals	366	489	884	1,905	2,565	2,251	1,750	2,503	3,413	3,469
Chemicals	213	257	279	720	742	630	670	831	1,203	1,565
Other	744	936	1,289	1,707	2,501	3,276	3,921	3,810	5,375	6,184
Million 1970 US \$										
Total	2,705	3,547	4,242	5,118	7,268	8,254	7,470	7,292	8,430	9,166
Grain	185	733	730	196	997	1,257	670	937	1,100	1,188
Other agricultural products	484	298	339	615	751	715	649	471	757	1,419
Machinery	946	1,149	1,353	1,622	2,700	2,929	2,827	2,716	2,512	2,350
Rolled ferrous metals	215	321	583	1,074	1,030	1,147	909	1,113	1,423	1,330
Chemicals	211	253	261	510	460	376	307	347	435	580
Other	664	793	976	1,101	1,330	1,830	2,108	1,708	2,203	2,299

Imports from the West also played a key role in supporting the energy and agricultural sectors. Because of Soviet deficiencies in drilling, pumping, and pipeline construction, the USSR bought about \$5 billion worth of oil and gas equipment alone in the 1970s. Such purchases covered a wide range of equipment that will add substantially to future energy production. US submersible pumps are estimated to have added roughly 2 million barrels per day to Soviet oil production in recent years. Similarly, the Soviet offshore exploration effort would not be nearly as far along as it is without access to Western equipment and know-how. West Germany and Japan have provided most of the large-diameter pipe needed for gas pipeline construction.

As for agriculture, Soviet grain imports averaged 14 million tons per year in the past decade. In 1981, grain purchases coupled with record imports of meat, sugar, vegetable oil, and soybeans and meal totaled about \$11.5 billion, accounting for 40 percent of hard

currency expenditures. Without Western grain, Soviet consumers would not have had the increase in meat consumption that they received in the early 1970s, and the fall in per capita consumption of meat in the late 1970s would have been far worse.

Western imports have also contributed to Soviet defense capabilities. Some products of the imported equipment and technology are used by the Soviet military—for example, trucks from the Kama River plant. Other imports help in the production of important inputs for defense industries—for example, numerically controlled machine tools, specialty steels, and plant and technology to produce them. Finally, because most defense industries also produce for the civilian economy, purchases of Western machinery for the civilian sector help ward off the encroachment of civilian requirements on the production schedules of defense plants.

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Prospects for a Resource Shift

To be sure, on a "micro" level the Soviet military-industrial complex has on occasion been directed to help reduce Soviet dependence on Western imports by shifting resources to the civilian economy. We have information that suggests the defense industries are now charged with helping to modernize the civil gas turbine industry so that the Soviets will be able to produce their own efficient turbines for gas pipelines.

The Soviet economic predicament is in many ways a product of Moscow's own choosing. By placing a priority on military research and production, the leadership has slighted the civilian sector, thus helping to create pronounced imbalances in the economy.

Although the Soviet economy is in deep trouble, the country's present leaders do not believe the time has come for drastic action. They are convinced—and we concur—that some growth remains to be squeezed from the present resource-allocation scheme. In a sense, Soviet leaders have reached the point of banging and shaking the ketchup bottle to get out a few more drops—the effort is tremendous and the return is small, but at least there is a return. The Soviet economic bottle is not yet empty—so to speak—and until it is, the leaders are likely to remain unwilling to launch a program designed to improve economic performance by shifting resources.

Any near-term decision by the Soviet leadership to shift resources from the military to civilian investment is unlikely for other reasons as well:

- The Soviets recognize that military power is their principal currency as an international actor and that continued high levels of defense investment are necessary to sustain the present dimensions of Moscow's global role.
- The Soviets' assessment of their security requirements for the 1980s would probably hold little prospect for reduction in defense spending. The recurrence of instability in Eastern Europe, the prospect of an increased arms competition with the

United States, and continuing hostility with China will maintain the pressure for continued high levels of military outlays.

- Given the current support within the Soviet elite for maintaining a strong military position, advocacy of deep cuts in military spending would necessarily involve formidable political risks for any faction within the Politburo inclined to move in this direction. This would be particularly true during a succession period, when those maneuvering for power would be reluctant to advocate major changes in defense policy.

No faction would propose a resource shift, and the Politburo as a whole would be unlikely to authorize a shift, unless in the judgment of the Soviet leadership, a resource shift were economically necessary. Moreover, Soviet leaders would resist the idea of a resource shift unless and until they had reason to believe that the West would not seize the opportunity to forge ahead militarily while the Soviet Union "stands down."

Nonetheless, the Soviets could at some time feel impelled to reduce defense expenditures if:

- Economic conditions in the USSR turn out to be poorer than we currently project (for example, a series of disastrous harvests causing an actual reduction in economic output).
- Extraordinary political shifts occur, such as a Sino-Soviet rapprochement, a general lessening of tensions with the West, or a move by West European countries away from US influence.
- Soviet political leaders who are sympathetic to consumer needs come to power



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Implications

Since the credit, goods, and technology provided by the West have helped Moscow to maintain its current allocation scheme, it follows that if the West were able to deny or limit Moscow's access to these forms of assistance, pressure would be increased on the Soviet leadership to shift resources from arms production to the civilian economy.

The action that would impinge most quickly on the resources available for military production would be denial of machinery and materials used either to produce machinery or to supplement domestic machinery production. For example:

- An embargo on specialized oil and gas production equipment would force Moscow to allocate military-oriented metallurgical and machine-building facilities to produce such equipment; reduced Soviet

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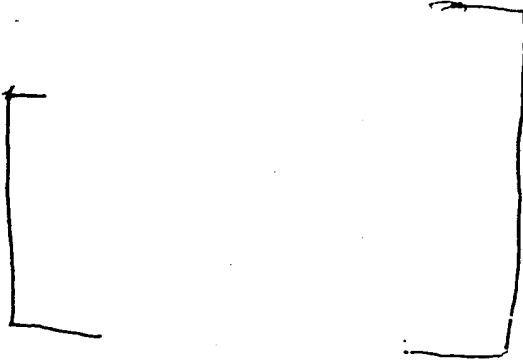
petroleum output in the interim would aggravate civilian industrial problems and might, therefore, cause additional civilian encroachment on defense production.

- An embargo on large-diameter gas pipe and other high-quality steel products could possibly cut into production of such military items as submarine hulls.
- An embargo on equipment for plants manufacturing cards, trucks, and mining and construction vehicles (as well as an embargo on such vehicles themselves) could increase the pressure in the Soviet Union to produce these items in military plants

Western denial of grain and other agricultural products would also hamper the Soviet military effort. For example, to increase domestic farm output, Moscow might have to allocate more factory space to producing farm machinery instead of tanks and armored personnel carriers. A Western embargo on selling farm machinery or on building the facilities that manufacture such machinery would also put pressure on existing priorities. Reduced per capita food consumption would work against Soviet efforts to raise worker productivity, increasing the problems facing industry

By curtailing the Soviets' import capacity—primarily by restricting credits but also by hampering their oil and gas production and thus their hard currency exports—the West would further raise the cost to the USSR of maintaining its present policies on resource allocations.

It is, of course, impossible to say for certain that the Soviet leaders would respond to Western pressure by shifting resources. However, it is important to note some instances they have deemed a shift to be best interests and have directed the military-industrial complex to support the civilian economy (see page 12).



Appendix

The Impact on the Economy of Cuts in Defense Spending

To estimate the impact of a shift in resources from defense to the civilian economy, we analyzed the impact of the assumed reductions in Soviet defense spending on our microeconomic model of the Soviet economy, using four postulations of labor and capital productivity and energy availability. The results are shown in the figure on page 16. The four cases considered are as follows:

A. Reduced Defense Spending

This case assumes that the extra investment resources from reduced defense spending have the productivity characteristic of the overall economy. It also reflects the period since 1975, which has shown especially low productivity of additional investment.

B.—Plus Higher Productivity of Defense Capital

This case assumes that the extra investment resources from reduced defense spending have doubled the productivity of those resources usually devoted to the civilian sector.

C.—Plus Fewer Bottlenecks

In the period of 1966-74, the Soviet economy did not suffer from as significant energy and raw material shortages as it does now and probably will the future. This case estimates the impact of lower defense spending, assuming that the extra investment resources allow a return to earlier levels of overall productivity.

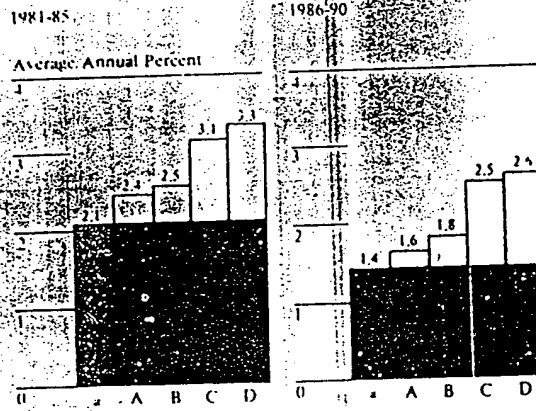
D.—Plus No Energy Constraint

Finally, this case assumes that extra investment is enough to remove any remaining constraint on production due to energy problems.

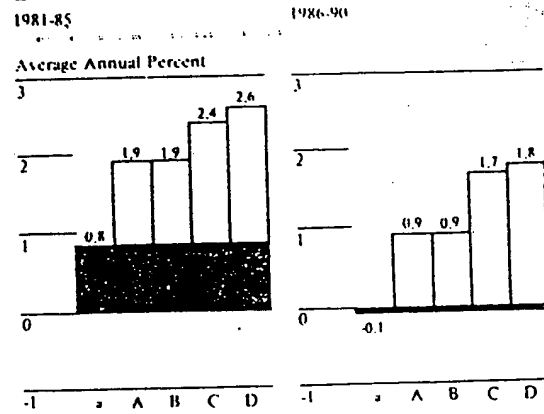
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Impact of Lower Soviet Defense Spending: Alternate Cases

GNP Growth



Per Capita Consumption Growth



- a - Baseline growth with current estimate of defense spending.
- A - Reduced defense spending.
- B - Reduced defense spending and assuming higher productivity of capital shifted from the defense industries.
- C - Reduced defense spending and assuming higher productivity of defense capital shifted from the defense industries and fewer bottlenecks in the economy.
- D - Reduced defense spending and assuming higher productivity of defense capital shifted from the defense industries, fewer bottlenecks in the economy and no energy constraints.

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