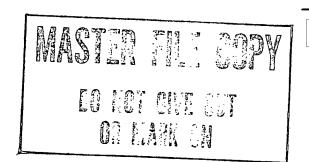
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**USSR Monthly Review** 

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July-August 1983

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July-August 1983

The USSR Monthly Review is published by the Office of Soviet Analysis. Comments and queries regarding the articles are welcome.

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**Perspective** 

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### Soviet Agriculture in Transition

Andropov's first year in power may coincide with the USSR's first good
harvest in five years—a piece of luck that would redound to his political
advantage and help establish him as an effective patron of the Soviet
consumer. How he turns luck into farm policy will in part determine
whether he can sustain this image and translate it into gains in productivi-
ty, both in the farm sector and throughout the economy. In this issue, we
examine the instruments available to Andropov (investment resources,

foreign trade, and organizational changes), the use he has made of them in his first year, and their potential impact on Soviet agriculture and food availability.

In November 1982 Andropov inherited a legacy of four consecutive years of poor performance, a farm policy already beset by bureaucratic and political discord, and a resource burden that was costing the USSR annually more than one-fourth of its total investment, one-third of its hard currency earnings, and large and growing subsidies to maintain stable retail food prices. While there is little chance of reducing this burden in the next few years, the regime may restructure it in the hope of achieving greater returns. Since taking power, Andropov has (1) endorsed the Brezhnev Food Program, with its emphasis on investing in sectors supporting agriculture, particularly farm machinery and food-processing equipment; (2) actively promoted the Program's job contract wage system, which ties remuneration more closely to productivity; and (3), through party secretary for agriculture Gorbachev, lobbied for implementation of the organizational aspects of the Program (see "The Food Program Under Andropov"). Recognizing that rhetorical support alone would not be enough to make the Program work, Andropov may have raised its priority claim on selected resources to a par with (and possibly higher than) some defense claims.

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Like previous Soviet leaders, Andropov would like to reduce the USSR's dependence on imports of Western grain and other foodstuffs. With a good grain harvest, Moscow may not need to increase grain purchases this year, but the regime knows that, barring a sustained string of good luck with the weather, it must continue to import relatively large quantities of grain and meat to support its livestock herds and satisfy the ever-rising demand for quality foods. This is reflected in the provisions of its new Long-Term Grain Agreement with the United States, despite the current world grain surplus (see "Prospects for Soviet Grain Imports in the 1983/84 Marketing Year").	, 25X
Whether the Soviets can reduce meat imports depends in the long run on the success of the Food Program and its impact on domestic livestock raising. For the near term, meat will probably continue to bulk large in Soviet agricultural imports, even though domestic production may reach a record level this year.	25X <sup>2</sup>
The Andropov regime may also use the foreign trade instrument to bolster its investment in farm machinery and equipment for the food-processing industry.  the USSR plans to purchase large amounts of Western equipment for the consumer goods and food-processing sectors and has budgeted \$1.5 billion for such purchases over the next few years.	25X <sup>2</sup>
Aside from the Food Program, the regime has given little indication of impending changes in farm management and organization. Although Andropov has called for careful study of innovations adopted in other socialist countries (an apparent reference to the private agricultural sector in Hungary), his strong commitment to socially owned agriculture may somewhat reduce the support for private plots—as suggested in "Whither the Private Plot."	O.E.V.
A good performance by the farm sector this year will enable Andropov to claim success for his farm policy and will reduce pressure on the regime to pursue different (perhaps more radical) policy options. Nevertheless, the key factors retarding long-run agricultural efficiency will remain (administratively set prices, for example, and centralized planning and resource allocation) and will continue to limit the productivity of Soviet farms.	25X1
anocation, and win continue to innit the productivity of Soviet farms.	25X <sup>2</sup>

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### The Food Program **Under Andropov**

In May 1982 President Brezhnev announced a Food Program designed to spur agricultural production and to promote greater efficiency from the farm to the retail shelf. Since coming to power, Andropov has publicly supported the central elements of the Brezhnev program. While accepting his predecessor's prescription, Andropov appears to recognize that, if the program is to work, it requires more time and strong leadership support for its major initiatives.

#### Organizational Aspects

Between May and November 1982, few top leaders gave much support to the controversial rayon agroindustrial associations (RAPOs) stipulated by the Food Program. A few weeks after Andropov came to power, however, the regulations specifying the rights and duties of RAPOs and their oblast counterparts were published. Whether Andropov played an active role in pushing the regulations through or simply allowed them to appear when they were ready is not known.

Although Andropov himself has had little to say about the specifics of the reorganization, Mikhail Gorbachev, spokesman for agriculture, began active lobbying for the structural reorganization proposed in the Food Program soon after Brezhnev's death, taking a stronger stand on the implementation of the May 1982 plenum's decisions. Gorbachev had previously concentrated on agriculture's need for more machinery, equipment, fertilizer, and advanced on-farm technology with little or no comment on RAPO proposals.

The RAPO is self-financing and includes all farms, service agencies (for example, machinery repair centers), and processing enterprises in a given district.

<sup>1</sup> The Food Program called for administrative bodies at the national and regional levels to coordinate the activities of farms, foodprocessing enterprises, transport organizations, and the trade network. At the same time, large investments were planned to upgrade the system for handling, storing, and processing food and to improve living conditions in the countryside. The Food Program also raised farm wages and bonuses to foster higher output and retention of younger, better educated workers on farms.

Although the Food Program made service organizations subordinate both to the RAPO and to the parent ministry or state committee, few RAPOs acquired sufficient authority to make service organizations respond to the needs of farms.

Soviet press reports and Embassy conversations with Soviet officials after the May 1982 plenum acknowledged that the RAPOs were much resisted by the ministries and state committees involved. One writer observed that oblast service organizations were advis- 25X1 ing their rayon subdivisions to participate in RAPOs without giving up traditional prerogatives. As a result, lack of control over the service organizations that supply equipment, repair services, agricultural chemicals, and construction services severely limited the effectiveness of the RAPOs. That preparation of the tractor fleet for spring sowing was slower this year than last is but one example of the lack of improve 25X1 ment in cooperation between farms and service orga-

The Andropov regime took steps in late July to merge the interests of farms and service organizations by issuing a decree that ties rewards for service organizations to growth in output and productivity on farms that they serve. Because the decree does not alter the dual subordination of service organizations, however, management problems are likely to continue.

#### Resource Allocations

nizations.

Both Andropov and Gorbachev have noted agriculture's need for more machinery, agricultural chemicals, and other goods. In April 1983 a new decree was published, calling for increased production and delivery of agricultural machinery to farms in the period 1983-90. Press reports and comments by a Soviet official suggest that current investment allocations are being increased to finance these measures.

under both Brezhnev and Andropov, some adjustments affecting resources allocated to other sectors (including defense) were made to keep the Food Program on track. It remains unclear whether this has caused any significant displacement of the priority assigned to defense and other sectors.

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The Food Program has not yet led to a substantial boost in deliveries of machinery to agriculture. Soviet statistics confirm that in the first half of 1983 deliveries of most major types of equipment were at or slightly below previous peaks established for sixmonth periods since 1980.  Moreover, sharply accelerated deliveries are not likely this year. The limited data available on industrial production in the first six months of 1983, furthermore, indicate that production of at least some types of agricultural machinery is probably growing too slowly to meet even the modest 1983 delivery targets. Fertilizer deliveries, however, are up sharply compared to previous six-month periods. Deliveries in the first half of 1983 were 10 percent above those in the first half of 1982 and 20 percent above those in the second half of 1982. Unless the pace of production falls off appreciably during the year, 1983 delivery goals for fertilizer probably will be met.	The Soviet press reports that experimental use of the system has resulted in higher crop yields and lower production costs. These experiments also suggest that there are large obstacles to successful widespread use. Farms often do not supply inputs reliably. Many workers lack the skill to manage crop production and to use and maintain machinery properly. Moreover, workers have had little incentive to form contract teams in recent years because in poor crop years they earn more under an hourly wage system.  Outlook Although the Food Program offers long-run potential for more efficient food production, implementation probably will be slow:  • Benefits from reorganization cannot be fully realized until differences between central ministries and local authorities are resolved. Andropov must take additional steps if this very slow process is to
Incentives	accelerate.
Andropov evidently realizes that reorganization and increased investment in food production will provide limited gains unless workers have better incentives, particularly in the form of bonus wages, to operate efficiently. To this end, he and Gorbachev have actively promoted the collective contract system—an aspect of the Food Program that received relatively	• The badly needed investment programs planned to improve rural infrastructure and to modernize industries producing machinery for food production are by nature long-term projects. Even with strong leadership support, they cannot be expected to show immediate results.
little attention before Brezhnev's death. In this system, which has been used experimentally at least since the 1960s, farm workers are rewarded according to the size of the harvest rather than receiving hourly or piecework rates.  Despite Andropov's campaign to increase its use, the	• If average or better-than-average weather prevails over the next few years, farm output probably will increase at rates acceptable to the leadership. In this case, the priority for stepped-up resource allocations to agriculture could drop, slowing implementation of the Food Program.
collective contract system—also referred to as the job	The greatest impediments to success of the Food
contract wage system—is spreading very slowly. <sup>2</sup> According to the Chairman of the Agricultural Workers Union, less than 10 percent of the teams engaged in crop production in 1982 switched to this method of pay.	Program are the failure to allow farms to make those decisions that should be made at the local level—such as composition of output and planting and harvesting schedules—and the Soviet system for remuneration of farm managers, which provides little or no incentive to be efficient in the use of resources. In general,
<sup>2</sup> In the collective contract system, the farm supplies machinery and other inputs to a group of workers who agree to meet specific output targets. Workers receive cash bonuses during the growing season with a final settlement after the harvest depending on crop yields and animal productivity. The goal is to eliminate piecework and	collective farm managers and state farm directors attempt to maximize output with little regard for prices, cost, and profits.
hourly wage rates that reward only the quantity of work done, not	

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the size of the harvest.

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1983 Soviet Crop and **Livestock Prospects: Best in Five Years** 

Barring a major deterioration in weather conditions, it now appears that the USSR is headed for a grain crop of some 210 million tons in 1983, the fourth largest ever and the best performance since the 1978 record of 237 million tons. Moscow's target of 238 million tons, however, is well beyond reach even with excellent weather during the remainder of the crop season. Good prospects for the major nongrain crops in the Soviet Union-sunflowers, sugar beets, potatoes, vegetables, and cotton—suggest the outturn of these crops will be above 1982 production and exceed the average of recent years. We believe even with a crop of 210 million tons Soviet grain imports during the marketing year, which began on 1 July, will be in the range of 25-30 million tons.

### Recent Weather and Crop Conditions

Following four poor grain crops in a row, the USSR finally appears headed for a good harvest in 1983. Indeed, as of late July, crop prospects throughout most of the Soviet Union are favorable. Alternating periods of rainfall and sunshine have promoted plant development and maintained soil moisture reserves at adequate levels in most regions. On the basis of our analysis of current weather patterns, we believe that these conditions will continue through the end of

August. Analysis of LANDSAT indicates that grain yields may reach record levels in some areas. with few exceptions, crops are in generally good addition, deliveries of chemical fertilizers during the first half of 1983 exceeded plan and were up 10 percent over the corresponding period last year, according to official Soviet statistics. Given adequate moisture, properly applied fertilizer is the most important factor in raising Soviet crop yields.

There have been some problems, however. From late May through early June, the southern Ukraine, the lower Volga Valley, and the northern North Caucasus were hit intermittently with hot, dry wind-referred to by the Soviets as a sukhovey—reducing potential yields of both winter and spring grains. By the time

the weather pattern responsible for the sukhovey broke on 4 June, our analysis of meteorological data indicated that crop losses had amounted to about 8 million tons. A shortfall in the area sown to grain has also lowered this year's potential crop size, in our judgment by some 2 million tons. According to preliminary statistics on midyear plan fulfillment, plantings this year totaled 122.5 million hectares, below the 124-million-hectare plan and the smallest since 1972. This shortfall is partly the result of weather problems in Siberia at the end of the planting season, but it also reflects a continuing Soviet effort to expand the amount of arable land lying fallow.

### Outlook for the 1983 Grain Crop-Uncertainties Ahead

With normal weather for the rest of the season, we believe that the 1983 Soviet grain crop will be about 210 million tons, only 10 million tons below our May forecast. The US Department of Agriculture currently estimates this year's crop at 200 million tons.

With more than two months remaining in the crop season, there is, however, still some uncertainty attached to our estimate. We will be closely monitoring the impact of future weather on potential crop size. 25X1 With excellent conditions for the rest of the year, a 25X1 crop perhaps as high as 215 million tons could result. On the other hand, a 210-million-ton harvest is by no means assured. Although not a problem at the present time, excessive rainfall during the rest of the harvest campaign—now approaching the halfway point could seriously hamper combining operations and lead to sizable losses in both grain quantity and quality. Moreover, a bout of hot, dry weather in the spring grain regions east of the Ural Mountains during the second half of August—as grain is ripening—would probably cause kernel shrinkage, thereby lowering potential yields.

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USSR: Grain Production a

Million tons

	1976-80 Average	1979	1980	1981 b	1982 c (estimate)	Forecast 1983 d
Total	205.0	179.2	189.1	158.0	165.0	210.0
Wheat	99.7	90.2	98.2	81.0	83.0	87.5
Coarse grains e	95.1	81.4	80.7	68.0	73.0	108.6
Other f	10.2	7.6	10.2	9.0	9.0	13.9

a Soviet official statistics unless otherwise noted. Measured in bunker weight, that is, gross output from the combine, which includes excess moisture, unripe and damaged kernels, weed seeds, and other trash. For comparison with US or other country grain output, an average discount of 11 percent should be applied. <sup>b</sup> Grain production in 1981 was unofficially reported at 158 million

- d CIA estimate. The USDA currently estimates this year's crop at 200 million tons.
- e Coarse grains include barley, rye, oats, corn, and millet.
- f Other grains include rice, pulses, and buckwheat.

### Outlook for the Nongrain Crops

With normal weather for the rest of the season, we

- A sunflower crop of 5.5-6.0 million tons.
- Sugar beet production in the range of 80-85 million
- A vegetable harvest of 28-30 million tons.
- A potato crop of 80-85 million tons.
- A cotton harvest of about 9.5-10 million tons. If these forecasts 2 hold, output of sunflowers, sugar beets, and potatoes would be up for the second straight year, vegetable production would match last year's record crop, and the harvest of cotton would return to a near-record level.

### Factors Favoring Major Nongrain Crop Production

The early onset of spring and favorable weather to date are the primary factors favoring increased production of nongrain crops this year. Sowing was

<sup>2</sup> Estimates are based on past production trends, daily meterological	ogical
data, local press articles, reports from US agricultural attach	es,
	Αt
present, no crop models are used.	

completed well within the optimal time, decreasing the likelihood that harvesting will be disrupted by winter weather. For example, cotton production last year was reduced because of cold, wet conditions during harvest and many sugar beets and potatoes were left frozen in the ground. Crop development this year has been aided by generally good growing conditions since planting. The late May/early June sukhovey in the southern European USSR, a principal sunflower region, had a minimal effect on recently germinated sunflowers. The increased availability of chemical fertilizer this year has also boosted prospects for nongrain crops.

### Livestock Sector Improves

Midway through 1983, the outlook for the crucial livestock sector is noticeably better than last year. Meat production during the January-May period on state and collective farms—roughly two-thirds of total meat output—was almost 7 percent above the comparable period last year and 6 percent above the 1978

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tons. Grain figures by type represent our estimates. c The 165-million-ton figure should be considered our best estimate of last year's Soviet grain harvest, but one that is subject to error. The maximum range of error in our grain crop estimate over the previous four years was ±8 percent, implying a crop in the range of 152-178 million tons. The US Department of Agriculture currently estimates last year's crop at 180 million tons.

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level when total meat production peaked at 15.5
million tons. This improvement is a reflection of the
record numbers of livestock on hand following an
unusually mild winter and earlier-than-normal access
to spring pasture. More important, the present herd
size has set the stage for substantial growth in total
meat production after four years of stagnation at
roughly 15.2 million tons. Indeed, output could reach
a new record of about 16 million tons this year if feed
supplies remain sufficient, grain imports reach 20
million tons, and the grain crop totals 210 million
tons.

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Prospe	ects for S	Soviet	
Grain 1	<b>Imports</b>	in the	
1983/8	84 Mark	ceting	Year

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With prospects for a much-improved domestic grain crop after four consecutive poor harvests, Moscow's immediate grain import needs have been reduced considerably. We believe that the USSR is likely to import 25-30 million tons during the 1983/84 marketing year (MY), which began 1 July, although the actual level will depend primarily on Moscow's desire to rebuild stocks and its hard currency position. Although still large, this level of imports is lower than the 1982/83 MY estimated imports of 33 million tons and substantially below the 45 million tons imported in the 1981/82 MY. With the successful conclusion of negotiations for a new US-USSR Long-Term Trade Agreement (LTA), US exports to the USSR will increase but will not regain their previous dominant position in the Soviet grain market.

world grain stocks and relatively low prices, the USSR could use this opportunity to rebuild grain reserves, badly drawn down after four consecutive poor harvests, and to accelerate the pace for expanding herds and meat output.

As indicated in the previous article, with about two

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months remaining in the crop season, the size of this year's grain crop is not yet assured. If the crop comes in lower than we now estimate, Soviet grain import needs would probably increase. Because the chief need for grain is to support the livestock sector, however, an increase in the availability of nongrain feedstuffs over the 1982 level—currently the outlook is favorable—would offset in part the grain shortfall resulting from a smaller crop.

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### The Need for Grain

With a grain crop of 210 million tons (our current estimate), the USSR could be as much as 15-20 million tons short of the amount of grain we believe necessary to maintain current levels of seed, food, and industrial use and livestock herds, as well as to achieve planned output targets for meat, milk, and eggs. This estimate assumes that the mix of feed does not change and that there is no change in carryover stocks. To the extent that the share of grain included in livestock rations declines—a shift noted in 1982 as record quantities of forage crops such as haylage 1 and silage were harvested—this shortfall could be reduced. The anticipated increase in imports of soybean meal probably will not decrease the need for grain. It will, however, improve the nutritional balance of feed rations, supplying much-needed protein, and thereby improve efficiency, that is, product output per unit of feed input.

Offsetting Moscow's desire to rebuild its grain reserves are its attempts to maintain a sound financial position. In part as a consequence of the USSR's efforts to improve its hard currency balance-ofpayments position, grain imports during the 1982/83 MY were held to an estimated 33 million tons, well below the amounts required to meet production goals for meat and other livestock products. Such actions in the face of hard currency stringencies are not unprecedented for the USSR. Despite the disastrous 1975 crop, hard currency shortages were in part responsible for Moscow's failure to import the maximum amount of grain its ports could handle during the 1975/76 MY. Larger imports could have prevented at least some of the massive livestock slaughter that occurred.

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Moscow's efforts to improve its financial situation through increased exports—mainly oil—and restraints on its imports were quite successful in 1982; its assets in Western banks rose to a record \$10 billion and its gross debt fell slightly. First-quarter 1983

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trade data show some deterioration in Moscow's trade

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### Other Factors Influencing Imports

Although the current favorable crop prospects suggest Moscow's need to import grain will be the lowest in several years, the actual level of imports could be higher than required by current needs. With large

<sup>1</sup> Low-moisture silage made from grass and/or legumes.

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position vis-a-vis its hard currency partners, with its hard currency deficit increasing from \$1.2 billion in the same period last year to \$2 billion but remaining well below the \$3.6 billion deficit in the first quarter of 1981. Because of Moscow's strong financial position at the beginning of the year, we do not believe that this less-than-favorable trade trend or declining world oil prices have as yet affected the USSR's overall financial position.

the USSR in

early 1983 returned to paying cash for all its grain purchases, although credit arrangements are apparently still being put together for Moscow's use.

### **Grain Import Prospects**

Given a comfortable financial position and a relatively low grain import requirement, the USSR will probably think it prudent to import larger quantities of grain than the minimum required. Other demands on Moscow's hard currency resources, however, including imports of other agricultural products, will act as a constraint on Moscow's willingness to purchase quantities of grain at or above the average of 35 million tons for the past four marketing years. We anticipate, therefore, that grain imports will probably be about 25-30 million tons during the 1983/84 MY, provided there is no dramatic change in the grain crop during the remainder of the crop season.

In early July, Moscow took the first steps in lining up its grain imports for the current marketing year. The Soviets have reportedly purchased up to 4 million tons of wheat and barley from Canada, 500,000 to 750,000 tons of corn and sorghum from Argentina, and up to 800,000 tons of wheat from France. All of the grain is scheduled for delivery during the first half of the marketing year. In addition, Moscow has 2 million tons of grain remaining from purchases made during the previous marketing year that are scheduled for delivery during July and September. The remainder of Moscow's purchases will be made as necessary to ensure a continuous flow of grain imports into the USSR.

### World Market Conditions

The Soviets will continue to benefit from a buyer's market in world grain in the 1983/84 MY. Although it is too early to predict grain output in major

exporting countries, large carryover stocks are expected to keep supplies abundant and prices weak. Only the United States has officially put into effect plans to limit production through its payment-in-kind and acreage reduction program. US competitors have announced ambitious production plans and export policies. Total availability in the 1983/84 MY, however, will depend on weather, logistic problems, and the amount of grain planted in the Southern hemisphere this fall.

We believe that the major non-US exporters will aggressively seek to expand sales to the USSR. Canada will most likely continue to court Soviet grain purchases by offering discount prices and government-backed credits. The USSR has become an increasingly important customer, supplanting the PRC as Ottawa's primary importer. The Argentine Agriculture Secretary stated that his country hopes to continue shipping at least 50 percent of its exports to the Soviet Union, and Australian officials have stated publicly that they plan to seek negotiations with Moscow for a long-term accord.

### Impact on US Sales

The general atmosphere of US-USSR relations may continue to have a decided influence on US grain exports to the USSR in the coming year. Last year's cutback in grain imports from the United States was driven in part by political considerations. Abundant non-US grain supplies combined with a Soviet decision to reduce grain imports gave Moscow the opportunity to express its displeasure at US attempts to restrict East-West trade by limiting grain imports from the United States to 6.2 million tons, just over the minimum commitment under the current LTA of 6 million tons.

With the successful conclusion of negotiations for a new LTA, however, US grain exports will increase by at least 2-3 million tons over last year's level.<sup>2</sup> The

<sup>2</sup> Under the terms of the new LTA, which will commence 1 October and extend for five years, the USSR is to purchase annually a minimum of 9 million tons of corn and wheat in approximately equal quantities. Up to 1 million tons of the minimum could be satisfied by purchases of 500,000 tons of soybean and/or soybean meal. A maximum of 12 million tons of wheat and corn can be purchased without prior consultation.

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USSR: Grain Imports, 1978/79-1982/83 a

Million tons

	1978/ 79	1979/ 80	1980/ 81	1981/ 82	1982/ 83 b
Total	15.0	30.4	34.0	45.0	33.1
United States	11.1	15.2	8.0	15.4	6.2
Canada	2.1	3.4	6.8	9.2	9.3
Argentina	1.3	5.1	11.2	13.2	9.4
Australia	0.1	4.0	2.9	2.5	1.0
EC	0.2	0.9	1.5	2.7	4.3
Other	0.2	1.8	3.6	2.0	2.9

a 1 July-30 June.

new agreement assures that the USSR will continue to be a large market for US grain exports and opens up the possibility of steady sales of US soybeans and soybean meal. Moreover, the new grain agreement will help restore in Moscow's eyes the image of the United States as a reliable supplier, although politics may well continue to be a factor influencing the USSR's grain import decision. With guaranteed access of up to 12 million tons of US grain, Soviet traders would probably not hesitate to purchase more than the 9-million-ton minimum if economic conditions were favorable.

Nevertheless, any increase in US grain exports to the USSR beyond the 9 million tons will be constrained by Moscow's reduced grain import needs, its LTA commitments with non-US exporters, and its desire to maintain diversified sources of grain supply. Following the partial US grain embargo in 1980, the Soviet Union sought to diversify its source of grain imports (see table). Long-term grain agreements were signed with Canada, Argentina, and several smaller suppliers, which now commit Moscow to purchase a minimum of 10 million tons from these suppliers. In addition, a protocol signed with France last year reportedly guarantees the USSR another 1-3 million tons of grain. The USSR also receives about 1 million tons of grain annually from Hungary and Romania.

These commitments, which already account for roughly half of estimated grain imports for the current marketing year, will effectively prevent the United States from regaining a dominant position in the Soviet grain market. Only in years of large Soviet needs and tight world supply will the USSR need to turn to the United States for large quantities of grain.

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b Estimated.

Whither the Private Plot?	
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The Andropov regime's strong commitment to socially owned agriculture implies keeping the private-plot system within its present legal limits. Indeed, should the socialized sector make relatively good gains in the near future, support for the private sector is likely to dwindle.

Since the end of the Stalin era, policy support for private agriculture—which accounts for about one-fourth of all farm output—has followed an on-again, off-again pattern. When the socialized sector has faltered, the leadership has relaxed restrictions on private agriculture; and, when the socialized sector has shown signs of recovery, Moscow has retreated from campaigns to boost private output. While endorsing the Brezhnev effort to encourage the private-plot system, the present leadership is predisposed to emphasize socialized agriculture. Recent policy pronouncements indicate top-level reluctance to give the private sector any more legal scope:

- In October 1982 Mikail Gorbachev, the powerful party secretary in charge of agriculture, delineated the present and future status of the private plot: "The party proceeds on the basis that collective and state farms, both at the present stage of socialist construction and in the long term, remain the basic form of agricultural production. At the same time it is recognized as important to support the population's personal plots. Our party regards these as an integral component of socialized agriculture at the present stage, a substantial reserve for supplementing foodstocks, and an important condition of the fuller utilization of manpower. But their potential must not be overestimated."
- In a *Pravda* article in February 1983 on the state of agriculture in general, Gorbachev did not mention the private sector.
- As much as one-third of the total amount of meat, milk, and vegetables is produced in the private sector. Moreover, the inefficiency of the state-operated system for marketing perishable produce causes Soviet consumers to rely either on their own plots or on direct purchases from private producers for a major share of their quality vegetables, meat, dairy products, and other perishables.

- In a February 1983 article in the party's ideological journal, Kommunist, Andropov ruled out the expansion of any type of private ownership. "It is on the basis of socialist ownership that a powerful economy developing on a planned basis has been created in our country. Both problems and difficulties arise. Their origin may be different, but it is never connected with the essence of public, collective ownership, which has been firmly established and has proved its advantages. On the contrary, a considerable part of the shortcomings . . . are caused by deviations from the norms and requirements of economic life, the keystone of which is the socialist ownership of the means of production."
- In his speech to the party plenum this June, Andropov criticized Soviet science for not providing "practical, socialist solutions" to the USSR's economic problems, implying that pragmatic measures based upon expanded private enterprise or ownership would not be acceptable. (He also called for careful study of the economic innovations adopted by other socialist countries, thus leaving the door ajar for some consideration of the measures that have allowed the notably successful performance of the private agricultural sector in Hungary.)

Andropov is likely to continue some support for private plots, particularly if socialized agriculture is slow to improve. He probably realizes that socialized agriculture will have considerable difficulty over the next decade in simply meeting its goals—let alone replacing private output—and he is not likely to forget the four consecutive seriously below-plan performances from agriculture (1979-82). On 18 April, in a speech to regional party leaders, Andropov implied that every rural family ought to raise livestock. Assistance to private agriculture is a part of the Brezhnev Food Program, which Andropov has endorsed.

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The Andropov regime's apparent lack of enthusiasm for expanding private agriculture has not gone unnoticed within the Soviet Union. In a speech at the Georgian party central committee meeting on agriculture this May, Georgian party leader Shevard-nadzde—earlier the strongest proponent of private agriculture among republic leaders—made no mention of it. Thus, the climate of encouragement, so important in inducing individuals to take the economic risks necessary to expand output, may be on the wane.

### Recent Performance of Private Plots

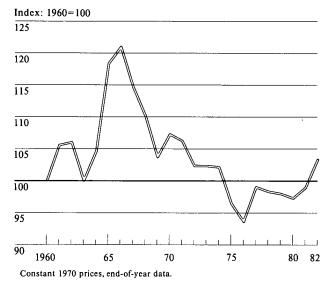
Performance of the private agricultural sector has improved marginally since the Brezhnev regime issued a decree in January 1981 aimed at bolstering private livestock production. It was issued following two disappointing grain harvests and the resulting stagnation in meat output, in hopes of inducing the private farmer to produce and sell more of the meat and milk products that were in continually short supply.

Despite the emphasis on livestock, the increased private output has come mostly in crops. Thus, the increase does little to alleviate that major irritant for the Soviet consumer—the shortage of livestock products. The outlook is a bit brighter, however: private livestock herds have increased in the last two years (see graph), as have the socially owned herds.

#### Contract Livestock Raising

A novel feature of the 1981 decree was its provision that a private farmer can raise unlimited amounts of livestock as long as he agrees to sell the mature animals back to the socialized farm. (Without such a contract, he may legally hold only a few animals.) The socialized farm sells young animals to a private farmer, provides a specified amount of feed at a specified price, and later buys the animals back at a specified price per kilogram of weight gain. The farm can then count these animals in its plan fulfillment. The contract system does not appear to have spread significantly, largely because farms are short of animal feed. In 1981, for example, private farmers purchased 16.5 million young pigs from the state and collective farms but only 216,000 came under the contract system.<sup>2</sup>

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### Material Support for Private Plots

Because the small farmer produces very little animal feed and has almost no direct access to seeds, fertilizers, and pesticides, he must get them from nearby farms. The managers of socialized farms, chronically under pressure to fulfill output plans with too few resources, are generally reluctant to share. Most feedstuffs are obtained as payment in kind, that is, as part of wages for labor performed on the socialized farm. Many private farmers steal feedstuffs or feed their animals bread (officially held at an artificially low price).

Although the 1981 decree and the 1982 Food Program order farm managers to give greater weight to payment in kind, so far we see very little change. The socialized sector provided to private farmers 1 million tons more coarse fodder in 1981 than in 1980 but about 1.5 million tons less grain. The sale of mixed

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feed was about the same in both years—inadequate;
ess than 3.5 million tons were sold to private farmers
n 1981, although they needed, according to one
Soviet estimate, some 17 million tons. The amount of
haylands turned over to private farmers for temporary
use also remained unchanged in 1980-81.

We cannot rule out the possibility that more pasture land has been turned over to private use. The USSR and union republic land codes have been revised to allow long-term private use of pasturage to encourage individuals to improve such land. In addition, in 1981-82 better weather improved the yields from pastures in many areas and probably benefited privately owned cattle.

The 1981 decree also recognized the private sector's dire need for more fertilizer, pesticides, seed, tools, and especially small machinery. Here again, little has been achieved since the 1981 decree, especially in the area of expanded production of machinery and farm implements:

- Although the "minitractor" is of greatest potential use to the private producer (with the proper implements it can perform a wide variety of tasks), after some 15 years of planning only in 1981 did one factory finally produce a few hundred of them. In 1983, 500 are scheduled for production—little help to the 34 million families engaged in private farming. The utility of even this minuscule output is lessened by the fact that the factory is unable to produce most of the implements designed to accompany the tractor.
- Small hand-held mowing machines could also be useful in harvesting grass in terrain not accessible to large machinery—often the kind of hayland allocated to individuals for temporary use. This equipment is produced in negligible quantities. Plans for producing a better model (the present model is too heavy) in 1981-82 fell by the wayside.

Despite the poor prospects for providing mechanical tractive power to the private sector, individual ownership of horses remains illegal in many areas of the country.

Even simple implements are a problem: there are not enough scythes, watering cans, shovels, carts, or pruning shears. The Central Union of Cooperative Societies estimates that the annual demand for milk cans is over 4 million, but it can provide only about 1 million.

Finally, fertilizers and pesticides are virtually unavailable; for example, a Soviet specialist has calculated that in 1981 only 17 percent of the fertilizer necessary for the private sector was provided. He concluded that this factor, in combination with the intensive use of private land holdings and the continual planting of the same crops, will reduce the yields of private plots in the near future

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# The Soviet Food Supply in 1983: Improved but Still Tight

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Shortages of some quality foods have eased this year, reducing the pressure on the leadership to abandon the longstanding policy of maintaining stable retail food prices. Supplies have not increased sufficiently, however, to permit the withdrawal of the informal rationing system for several foods that developed in 1980-82. Furthermore, unless the leadership sustains a fairly high level of imports, per capita consumption of meat in 1983 will not increase above the 1982 level. Because an increase in meat availability has been a longstanding goal—and will help the leadership claim success for the Food Program (announced in May 1982)—the Andropov regime is likely to keep meat imports near recent high levels.

### Developments Since the 1982 Harvest

So far this year, surveys of collective farm markets (CFMs), where private farmers sell their surplus, and of state stores have shown that most foodstuffs are more plentiful than in the same period last year.

some of the areas most hard hit in 1980-82 have begun to recuperate. The increased availability of food is also reflected in greater price stability in CFMs, where supply and demand determine prices. In Moscow, for example, according to our measures, average CFM prices for the first four months of 1983 were slightly lower than they had been in the same period last year.

The leadership has several reasons to feel relieved about the 1983 food supply:

- Meat output is up this year, reflecting record numbers of animals—the result of a very mild winter and earlier-than-usual access to spring pasture. If meat production in 1983 is about 16 million tons—as we believe likely—and imports approach last year's near-record level, Soviet per capita intake would increase by about 2 kilograms over the high point of the late 1970s.
- In 1982 a record vegetable crop and record-matching fruit crop, augmented by an unprecedented amount of imported fresh fruit, enabled consumers

to increase their per capita intake of vegetables by 5 percent and fruit by 2 percent and kept supplies up through last winter and this spring.

 Per capita consumption of milk and milk products declined again last year despite slightly higher production; milk output this year, however, has shown a strong surge, and the consumer may well regain most of the ground lost over the last two years.

Imports will continue to play an important role this year in contributing to consumption levels. In the past three years increased imports of several foodstuffs—particularly meat, butter, sugar, vegetable oil, and fresh fruit—have enabled the leadership to sustain per capita consumption in the face of problems in producing these items domestically. Import data this year suggest the leadership intends to maintain but not increase the import levels of the recent past.

Less Near-Term Pressure To Raise Prices

A few months ago we observed some waffling in Moscow on the longstanding commitment to hold retail food prices steady. After four successive poor performances from the agricultural sector, resulting in a considerable buildup of excess purchasing power in the hands of the public, the leadership seemed to be preparing the populace for price hikes. In January 1983 a Pravda article on the waste of bread included letters advocating higher bread prices, and a contribution to the same article by the first deputy minister of the food industry lacked the usual promise to hold the line on prices. In his well-publicized visit with Moscow factory workers in late January, General Secretary Andropov left the door open to price changes, saying that "the path of rising prices . . . does not suit us as a general one, although it must be said, we do have certain distortions and discrepancies in prices and we must eliminate them." Indeed, that same

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month, the leadership tested the waters by raising prices on some beverages and on two (already high-priced) categories of meat cuts.

But the regime has held off more widespread changes in food prices, probably gambling that a good year in agriculture would mean more staples in the shops for people to buy, and that this (combined with price increases for a range of nonfood goods and services in late 1981 and early 1983) would soak up enough rubles to ease pressures on supplies of quality foods. The prices of some staple foods were last officially raised in 1955, and those of meat and milk products in 1962. In mid-April, perhaps encouraged by the reasonably promising forecasts, Andropov strongly identified himself with the Food Program, which is aimed at reducing the gap between the demand for and the supply of quality foods—without resorting to higher prices—by increasing the supply. The leadership is well aware that the population is likely to view price increases as infringing an implicit social contract—in return for stable retail prices on essential goods, the populace puts up with low wages. So far, Moscow has preferred to deal with the effects of repressed inflation rather than risk violent protest of the sort that food price increases helped to provoke in 1962. The authorities are mindful also of the role of food price increases in kindling worker unrest in Poland.

The improved outlook for consumption of quality foods in 1983, however, merely postpones the problem of prices. For several years, the demand for livestock products generated by growth in disposable incomes has grown faster than their supply. Assuming—as we do—that consumer demand for meat rises at least proportionally with income, if the regime wished to eliminate only the *increase* in the supply-demand gap that has occurred since 1975, it would have to provide more than 70 kilograms of meat per capita this year. This is the Food Program target for 1990—a long way from the 1982 level of 57 kilograms and this year's possible level of 59 to 60 kilograms (about half the amount of meat that a US consumer eats).

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### Other Topics

Soviet Consumer-Oriented Initiatives—Vague on Particulars

Despite the increased attention accorded to the consumer in recent months, the Andropov regime has introduced no measures to bring about a rapid and sustained improvement in Soviet living standards during the balance of the current five-year plan (1981-85). Sharp changes in consumer welfare in any given year are, of course, possible because of fluctuations in agricultural output. But a sustained improvement in living standards would require a swift and massive redirection of resources that so far has not been indicated in decrees and speeches promising better times for the consumer. Any change in resource allocations in favor of the consumer would be more likely to occur in the 12th Five-Year Plan (1986-90)comments made by two Soviet foreign trade officials suggest Moscow may be shaping future investment plans to give priority to consumer-oriented industries.

### The Setting

The regime's apparently heightened attention to consumption comes at a time when growth in Soviet living standards has virtually stagnated. Per capita consumption declined by 0.7 percent in 1982, after an increase of 1.1 percent in 1981. Indeed, our estimate of per capita consumption of soft goods, food, and durables was lower in 1982 than in 1981 (table 1).

# Table 1 Growth of Soviet Per Capita Consumption and Selected Components

	1980	1981	1982 a
Total	3.0	1.1	-0.7
Food	2.1	-0.5	-1.0
Soft goods	3.7	1.9	-0.6
Durables	6.7	5.3	-3.5

<sup>&</sup>lt;sup>a</sup> Preliminary.

### Rhetorical Support

Although the need to boost consumer welfare was a major theme at the June plenum, specific plans to accelerate production of consumer goods and services were not presented. Among other things, Andropov promised better health care, a constant supply of quality foodstuffs, higher quality consumer goods, and improvements in housing conditions, including a self-contained flat for every family. At the same time, however, he made clear he was no supporter of

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¹ The CIA index of Soviet consumption is corroborated by the Soviet measure of growth in consumer welfare. In 1982, "real per capita income"—a Soviet measure in constant prices of consumption, excluding some services—rose by only 0.1 percent. Retail sales in constant prices increased by only 0.3 percent, implying a per capita decline of about 0.6 percent. Retail trade accounts for about three-fourths of Soviet personal consumption.

unbridled "consumerism" when he called for development of patterns of "reasonable consumption." <sup>2</sup> Indeed, in his June plenum speech and in other commentary, Andropov has maintained a cautionary tone regarding improvement in consumer well-being, stressing that increases in income must be more closely linked to increases in labor productivity and indicating that improvement in the standard of living will be slow.

### Legislative Support

A flurry of decrees aimed at improving the consumer's lot preceded the plenum, urging greater output without specifying how increases are to be achieved. With one exception, they make no mention of plans being altered to allocate more resources to consumption. The exception—the May party-state resolution on improving consumer goods production—implies that goals for production of consumer goods in 1983 have been raised and that the increased output is to result from greater efficiency as well as "extra allocations of raw materials, supplies, and equipment." The use of the phrase "extra allocations" is a departure from earlier consumer goods decrees, which indicated that such increases were to come from greater efficiency alone. But the resolution did not specify the quantity of these extra allocations, and subsequent press commentary on the consumer goods resolution has contained no references to them.

The other decrees deal with consumer services and housing construction. A Central Committee Council of Ministers resolution on developing "everyday" consumer services (including laundry, dry cleaning, personal care, and rental services as well as automotive, housing, and other repair services) was published in March. It calls for increased and improved consumer everyday services, especially in rural areas, but does not raise plan targets or provide for additional allocations of resources from the state. A Council of

Ministers resolution published in January instructed service establishments to broaden their hours of operation to better meet the needs of workers. It also urged factories to establish on-site service facilities and retail outlets for their employees. The resolution was intended to promote one of the key goals of the discipline campaign—reduced absenteeism—by making it easier for workers to shop before and after normal working hours. In February, a Central Committee resolution on improving housing construction harshly reprimanded various construction ministries for failing to meet housing construction targets in the past two years. The resolution calls for fulfillment of existing plans but does not raise present targets.

The Andropov leadership is also continuing the campaign initiated under Brezhnev to increase consumer goods production in heavy industry. Although heavy industry has long been responsible for production of consumer articles, its enterprises are now being tasked to produce a specified amount of consumer goods per ruble of the enterprise's wage fund. The new measure is intended to encourage enterprises to utilize "hidden reserves"—leftover raw materials and idle capacity for production of consumer goods. If this requirement is not met, the enterprise incentive fund is reduced; if it is fulfilled or surpassed, the fund is increased. This new link between remuneration and consumer goods production does not relieve the enterprise of its obligation to meet its primary output targets and is thus likely to provide only a limited stimulus to consumer goods output. Moreover, it does nothing to improve quality and encourage a product mix more in line with consumer demand

Andropov has also emphasized his support for the consumer by retaining the priority accorded to Brezhnev's Food Program, launched in May 1982 to improve the production, processing, and marketing of food products. Upgrading the Soviet diet was the centerpiece of the Brezhnev consumer welfare policy. Andropov has accepted the prescription for improvement in agriculture as laid out by the Food Program and has placed greater emphasis on the need to increase efficiency. Judging by Soviet press reporting on Politburo meetings, the leadership under Andropov

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<sup>&</sup>lt;sup>2</sup> Andropov specifically referred to the concept of living standards which "encompasses a steady growth of the consciousness and cultural level of the people, including their cultural standards in everyday life and conduct and what I would call reasonable consumption. Also encompassed in this concept is a good public order, health, a rational diet, a high quality of public service. . . . It also encompasses a morally and aesthetically adequate use of free time. In short, everything which together is worth being summed up as being civilized in line with socialist principles." It almost sounds as if Andropov sees a higher living standard as dependent more on self-sacrifice rather than increased consumption

has devoted more time to agriculture than any other domestic issue. A recent party-state decree on increasing production of agricultural machinery further underlines the leadership's support for the Food Program and the consumer. The new decree calls for improved quality of agricultural machinery, increased supply of spare parts, and better servicing of equipment.

### Organizational Support

Recent organizational changes in the Central Committee economic apparatus apparently reflect the aspects of consumer goods production the regime has chosen to stress. The Department of Light and Food Industry and the Department of Agriculture have been eliminated and replaced by the Department of Light Industry and Consumer Goods and the Department of Agriculture and Food Processing. The creation of the Department for Light Industry and Consumer Goods may be connected with the campaign to step up production of consumer goods in heavy industry by concentrating control of soft goods and consumer durables production in the same hands. Transfer of responsibility for food processing to the Department of Agriculture is probably designed to promote more effective implementation of the Food Program.

### Real Resource Committment

Deputy Minister of Foreign Trade V. N. Sushkov said in April that the regime is emphasizing improvement in light industry, food production, and consumer durables. Sushkov also said that investment in the light and food-processing industries will increase at the expense of heavy industry such as chemicals. According to Sushkov, the investment changes would be reflected in "the five-year plan," probably a reference to the 12th. He stated, however, that the military will be unaffected by the shift in investment priorities. Sushkov also stated that "action" is already under way in the food-processing and light industries but did not specify whether he was referring to organizational changes—such as the change in the Central Committee apparatus—or increased investment.

Table 2 Investment in Light and Food-Processing Industries <sup>a</sup>

	1976	1977	1978	1979	1980
Investment (billion rubles)	4,415	4,262	4,315	4,420	4,600
Share of industrial investment (percent)	10.9	10.0	9.5	9.7	9.9

a Source: Soviet Statistics on Capital Formation-A Research Aid.

Recent comments made by another Soviet trade official suggest heightened interest in imports of machinery, plant, and equipment for production of consumer goods.

the official in late June claimed that his organization had \$1.5 hillion for the purchase of Western consumer

\$1.5 billion for the purchase of Western consumer goods factories and machinery. The \$1.5 billion could represent a major increase in hard currency purchases of this type of equipment, provided the funds were spent by 1985.

The size of the deals and the negotiations required for such arrangements indicate that the purchases are likely to be concentrated in the next five-year plan.

### Long-Term Outlook

Sushkov's comments as well as the report on import plans suggest that Moscow may be shaping investment plans for the 1986-90 period to give priority to sectors directly serving the consumer. But Sushkov's remarks must be viewed with caution. First, his access to information regarding domestic investment plans is not known. Secondly, he gave no figures on the magnitude of the increase in investment allocations. Since the share of industrial investment in the light and food-processing industries was less than 10 percent in 1980 (see table 2), even a large percentage increase would not necessarily entail a substantial

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diversion of resources from other claimants. Further-
more, Sushkov's reference to more investment may
reflect the increased emphasis on the processing sec-
tors of the agro-industrial complex already projected
in the Food Program.

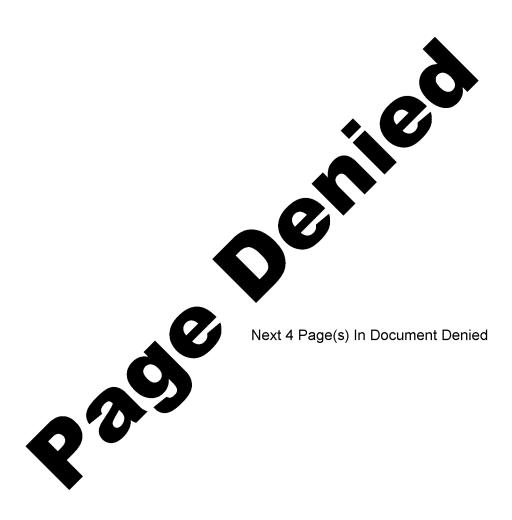
The machinery branch of heavy industry may be of particular importance to improving the consumer's lot. Several prominent Soviet officials and economists-for example, Minister of Agriculture and Politburo member Mikhail Gorbachev and Abel Agenbegyan and other economists from the Siberian branch of the Academy of Sciences-have argued that improvement in overall economic performance critically depends on increased production of better quality machinery. They have urged increased investment in machinery, a policy that could be consistent with stepped-up investment in industries serving the consumer. The key question is where will the resulting machines end up. Sushkov's comments and the decree on agricultural machinery suggest that a higher share may go to the light and food-processing industries and

to agriculture.

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# Soviet Military Electronics Design and Manufacturing: Potential Problems in the 1980s

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This article analyzes shortcomings in Soviet electronics manufacturing

Historically,

the prevalence of labor-intensive and manually controlled manufacturing processes has constrained the introduction of new technologies into Soviet military systems. Beginning in the 1970s, however, the Soviets initiated weapon system designs incorporating relatively newer technology not compatible with older manufacturing techniques. If they are to match coming advances in Western weapon systems and meet other military needs, the Soviets will have to place even greater emphasis on incorporating advanced materials and components into innovative designs. They will have to rely increasingly on computer-aided design and manufacturing to provide the accuracy and control for high-rate production of advanced systems

### Background

Technical and economic assessments of Soviet landbased radars, avionics, communications equipment, and computers reveal a fairly consistent pattern of conservative design and manufacturing procedures. In general, the Soviets:

- Incorporate new electronics into their military systems only when older technologies can no longer meet the requirements. This reduces design and manufacturing risk, but it also limits system performance.
- Use common components and circuit designs whenever possible, a practice that holds down the cost of producing and maintaining military systems and allows for the interchange of hardware within systems and among different systems.

- Emphasize only essential manufacturing procedures—hardware finishing for aesthetic purposes is deemphasized. The quality of workmanship is dictated only by function or need.
- Achieve quality in microelectronics products by high reject rates that are much higher than in the US electronics industry.
- Are hindered by a lag in critical technologies such as integrated circuits and computer memories. This probably has slowed their development of multifunction radars, digital signal processors, digital communications equipment, and computers.
- Use outmoded manufacturing practices that constrain the introduction of new technologies into system designs.

Future Systems

To cope with advances in Western systems, the Soviets are having to adjust their design and production practices. New Soviet systems are becoming more complex, requiring a multitude of new design aids, microelectronics production equipment, and numerically controlled machines. Examples of these new systems and components are:

• The SA-10 SAM system, which incorporates phase shifters, phase shifter controls, microelectronics, special and general purpose computers, and digital signal processors. These components could not be produced with the traditional labor-intensive approaches used for previous SAM systems such as the SA-5 and SA-6. Shortcomings in manufacturing capability may be one of the reasons for the slow deployment rate of the SA-10.

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- The MIG-31 lookdown air intercept (AI) radar, which requires high-tolerance components with predictable performance over a wide range of severe environmental conditions. Equipment used to produce the older Spin Scan and Jay Bird AI radars are inadequate to produce the MIG-31 radar in quantity.
- The AA-9 air-to-air-missile, which uses Soviet technology from the 1970s and requires manufacturing capabilities similar to that required for the other systems mentioned. In particular, the missile's Doppler-processing, semiactive radar requires precision machining and high-reliability electronics.
- The SS-NX-21 cruise missile, which may have a terrain-matching update system. We believe the Soviets had the necessary design and component technology in the early and mid-1970s, but production constraints such as those mentioned for the SA-10 may slow deployment.
- The new AWACS radar, which represents the highest level of Soviet airborne radar technology. Production of the radar and associated communications equipment presents a significant challenge to the Soviets, and shortcomings in current manufacturing capability could portend a slow development rate for the AWACs.

To counter potential US systems now on the drawing board or in advanced stages of development, future Soviet systems will require even more automated, high-precision, high-speed manufacturing equipment. Some of the US systems impelling the Soviets to improve their design and manufacturing processes are:

Advanced-Technology Fighter (ATF). The ATF will
use low-radar observable materials, vectored thrust,
composite materials, and advanced engines. New
Soviet design and manufacturing capabilities, development of special materials, and years of research in
radar-related technologies will be required to
counter the ATF.

¹ The Spin Scan and Jay Bird radars became operational in 1963 and 1968 respectively.

- Advanced Medium-Range Air-to-Air Missile (AMRAAM). This missile is designed for use against advanced fighters at altitudes up to 20,000 meters and at speeds up to Mach 2.5. The missile also has an advanced lookdown/shootdown capability. A US aircraft would be able to launch several of these missiles before any current Soviet aircraft could launch its first missile. The Soviets will be hard pressed to develop successful counters to AMRAAM. A combination of advanced aircraft design, electronic countermeasures, and missiles with faster reaction times will be required.
- Maneuverable reentry vehicle (MARV). The MARV uses advanced homing sensors for pinpoint targeting. A laser system with a very quick reaction time may be the only defense. The mass-production of such a laser would require a multitude of hightechnology manufacturing processes and equipment.
- High-Speed Antiradiation Missile (HARM). This fast-reaction weapon is capable of engaging almost all Soviet radars now deployed or in advanced stages of development. The missile's software-controlled processors reportedly can be reprogramed to engage new threats without expensive hardware modifications. The Soviets lack a countermeasure and face perhaps years of R&D to produce one.
- Pershing II. The Pershing's new inertial navigation system and high-accuracy terminal guidance system are a challenge to Soviet developers of antitactical ballistic missiles. For example, only the SA-X-12 SAM system currently under development is considered by CIA to have some capability against the Pershing II in its terminal maneuver mode. Production of this system in quantities sufficient to afford some degree of protection against the Pershing II would require a heavy commitment of scarce high-technology manufacturing resources.

The design, development, and manufacture of counterthreat systems to defend against these weapons

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present the Soviets with pressing needs for important new technologies. The most important of these are:

- Precision machinery for mass-producing high-density microelectronics including X-ray, E-beam, and focused ion-beam lithography machines; mask-making tools; crystal growth equipment; chemical-vapor deposition hardware; and computerized timing and control devices and wafer-handling equipment.
- High-quality materials for microelectronics production including silicon, gallium arsenide, and germanium.
- Design and manufacturing data for—as well as samples of—electronics devices including microprocessors, random-access memories, read-only memories, logic gates, surface-acoustic waveform devices, charge-coupled devices, traveling-wave tubes, diodes, and radiofrequency solid-state devices.
- Industrial machinery, processes, and controls such as multiaxis numerically controlled machines, computer-aided numerically controlled machines, robotics, nondestructive inspection, and automatic testing.
- Software for a wide range of applications. Without a comparable development or acquisition of advanced software, the majority of these materials and machinery would serve little purpose.

### **Implications**

There was a consensus among those participating in the contractor study that the obstacles to innovations found in the Soviet defense industry will hinder attempts by the USSR to overtake the West on a broad technological front. Instead, the Soviets can be expected to surge ahead in some technologies (lasers and optics for example) simply because they have chosen to place more emphasis on those areas than has the West. Furthermore, the current massive injection of microelectronic and computer technology is expected to give way to evolutionary refinements in their applications.

The Soviets lag the West in all the generic areas studied—by four to seven years in radar development, by two to five years in communications, and by three to seven years in computers.

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Radar Development. The development of radars in the USSR is directly influenced by the Soviet lag in microelectronics, computer hardware and software, and signal processors. The current lag of four to seven years, depending on the type of radar, can be expected to continue. Current examples:

• The Pechora early warning, ABM-related radar, which represents the latest in large Soviet radar developments, lags the US Pave Paws by approximately five to seven years in the transmitter module, signal processor, and computer areas.

• The SA-10 SAM system, representing advanced Soviet phased-array radar technology, lags the US Patriot system by approximately six years in the computer hardware/software and signal processor areas.

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• The lookdown AI radar associated with the MIG-31 lags the latest version of the F-14 AI radar by four to six years. Currently an advanced programmable signal processor is being added to the F-14 radar. It is doubtful the Soviets will be able to mass-produce such a signal processor for at least six years. The US development of radars such as the AI radar for the F-18 and "quiet" radars for stealth aircraft will ensure a continued Soviet lag in this category for several years to come.

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Communications. The secure, spread-spectrum, digital communications system used in the US AWACS system is at least four years ahead of any known Soviet system. Advanced components and subsystems of the AWACS include minicomputers, correllators, and solid-state devices used in the transmitter. The Soviet penchant for extensive command, control, and communications and the US intelligence

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collection efforts in this area will push the Soviet need	
for modern secure communications. Unless the USSR	
makes large advances in computers and microelec-	
tronics, the gap will continue.	25X1
Computers. The current lag of three to seven years in	
computers is due to a plethora of hardware and	
software design and production problems and may get	•
worse. Moreover, in specialized military applications	
such as the high-speed/capacity computers in ABM	
early warning radars, the Soviets have experienced a	•
host of speed, capacity, and reliability problems and	
may be even further behind.	25X1
<b>T</b>	
Prospects The inchility of the Soviets to expressible develop	
The inability of the Soviets to currently develop,	
produce, and assimilate advanced production methods has hindered their electronics industry. They have	
made strenuous efforts to update their production	
technology by indigenous means and by legal and	
illegal acquisitions of manufacturing equipment. Al-	
though they have been successful in getting advanced	
production equipment from Japan and the West in	
representative sample quantities, a large infusion of	
equipment will be required to overcome the present	
backwardness of the industry. While we are beginning	
to see signs that the Soviets are taking steps to	
overcome the lag, we project that it will be the early	
1990s before they can match current Western design	
and production capabilities, and by that time ad-	
vancements in the West will result in some degree of	
relative technological backwardness continuing in the	
USSR.	25X1
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## Soviet Interests and Options in the Caribbean

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In the past year or so, the Soviets have expanded their military and security links with Nicaragua, strengthened ties with Grenada, and welcomed Suriname as another revolutionary regime. These developments underscore Moscow's broad strategic interest in undermining the US position in the hemisphere. The ongoing airfield construction projects in Nicaragua and particularly in Grenada will improve the two countries' capability to support an increasing Soviet military presence and Cuban interventionism in the hemisphere. If port development programs materialize, Nicaragua and Grenada could also provide some support to Soviet naval forces.

Although the USSR probably does not currently assign high priority to a dramatic expansion of its military presence in the Caribbean Basin, it will probably continue incrementally to expand its limited military activity there. Moreover, it might consider limited use of Nicaragua and Grenada for periodic deployments of maritime reconnaissance or ASW patrol aircraft, such as the TU-95 Bear D or TU-142 Bear F, or for occasional visits by naval combatants.

### Soviet Objectives

Soviet policy toward the Caribbean region, in general, is largely motivated by the competition with the United States and the ideological commitment to support leftist causes. Moscow's basic aim presumably is to challenge US influence there by expanding its own political, economic, and military ties in the region and by promoting radical political change. To this end, the Soviets have been gradually establishing influence with the leftist regimes in Nicaragua and Grenada in the hope they will act as conduits to other revolutionary groups in the region and contribute to the emergence of similarly oriented regimes. Moscow anticipates that continuing instability in the region will divert US attention and resources—including military forces—from more distant problem areas and undercut Washington's credibility in the eyes of its hemispheric neighbors as well as other Third World countries

### Bilateral Ties

Nicaragua. The USSR's military and security role in Nicaragua gradually expanded as it helped entrench the pro-Soviet Sandinista regime. During the past year, military and security relations became closer and more publicized, and top Nicaraguan officials, including Sandinista leader Daniel Ortega, Defense Minister Humberto Ortega, and Interior Minister Borge visited Moscow for consultations.

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Moscow's current efforts to strengthen the Nicaraguan military suggest a special interest in bolstering Sandinista ability to cope with the insurgency. Recent Soviet deliveries of armed MI-8 helicopters, AN-26 transport aircraft, trucks, and communications equipment improve the mobility of the Sandinista forces and their counterinsurgency capabilities.

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During the past year, Moscow continued to encourage its allies to support Nicaragua. Growing East European military cooperation with the Sandinistas was almost certainly undertaken at Soviet behest, and the Soviets probably also encouraged Libya and other countries to provide military assistance and training.

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Grenada. The Soviets have steadily increased their influence in Grenada since Maurice Bishop and his New Jewel Movement took power in the March 1979 coup. This trend has been reflected in the past year by the establishment of the Soviet diplomatic mission on the island and in the growing number of high-level Grenadian visitors to the USSR. During this period, Prime Minister Bishop visited Moscow and met with Premier Tikhonov last July. Bishop also stopped over in Moscow last April en route to North Korea.

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In the last year, the Soviets have agreed to increase agricultural and technical assistance and have signed new trade accords.

Soviet technicians have been sent to Grenada to help

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install a Soviet-supplied satellite communications sta-There are a number of steps available to the Soviets to improve either the military capabilities of their Caribtion. More recently, a small number of Soviet ecobean clients or their own in the region. Many of these nomic advisers reportedly were posted to the island to assist with economic planning. options would be troublesome for the United States, 25X1 not only because they would increase Soviet influence 25X1 but also because they would force the United States to factor them into its military contingency planning as Suriname. In contrast, Moscow has been less active in well as divert military resources to counter them. 25X1 promoting ties with the leftist regime in Suriname, in part because Moscow appears much less certain about The USSR could at least give the impression of enhancing Cuba's security by modernizing and augthe extent of support for Army Commander Bouterse or his staying power. The Soviets have welcomed menting the Soviet brigade, whose main function Suriname as another revolutionary government in the seems to be to symbolize the Soviet commitment to Caribbean and no doubt see recent political develop-Castro. They could also bolster the Cuban military ments as a setback to US influence there. They forces by providing such weapons as SA-5s, more opened a resident embassy in Paramaribo last year modern MIGs, and newer coastal defense systems. 25X1 have recently indicated an interest in expanding economic relations, as long as it does not involve substan-The Soviets will probably gradually expand their tial Soviet aid. Moscow apparently does not have any military role in Nicaragua. For example, they could increase the number of military and security advismilitary or security relationship with Bouterse nor has ers—there are apparently about 100 there now—and it indicated an interest in acquiring military access. become more directly involved in planning and executing counterinsurgency efforts. 25X1 Moscow's Geopolitical and Military Interests In general Moscow has no present vital security If Moscow becomes convinced that the Sandinistas interest in the Caribbean region and has consequently are securely enough in power to risk tying Soviet invested only limited resources there. Because the prestige to them more directly, then it could lend region is remote from the USSR and important to US support by delivering weapons directly to Nicaragua security interests, Moscow has moved cautiously, and by sending significant numbers of Soviet advisers primarily relying on intermediaries while it keeps an and technicians. Such weapons could include the kind eye to US responses. It probably believes that Washof air and naval defense systems that have been ington would react with force to any Soviet move to supplied to Cuba. Under these circumstances, they establish a significant military presence in Nicaragua might even station a Soviet military unit in Nicaragua or Grenada, especially if this posed a strategic threat to provide a symbolic security commitment to the to the United States. regime. The Soviets could also play a more active role 25X1 in providing military aid to Grenada and Suriname. Increased Soviet Military Presence 25X1 The Soviets, however, probably are likely to continue Potential Military Options incrementally to expand their limited military activity There are also things Moscow might do to demonin ways that are unlikely to provoke the United strate growing Soviet involvement in the region and States. For example, they have long deployed TU-95 complicate US defense planning. Such steps would reconnaissance planes to Cuba and recently sent 25X1 TU-142 ASW aircraft, the first potential airborne provide little military capability beyond that provided by existing facilities in Cuba but could be undertaken weapons carriers, there as well to monitor US strategic submarine testing and transit areas. largely for political value. 25X1 25X1

The USSR might increase port calls by its surface combatants or attack submarines as a way of demonstrating support and its right to deploy warships to the area. The Soviets may think such deployments would serve notice on Washington that the USSR has a capability to operate in the region in wartime, and might cause Washington to divert military resources from other missions.

The Soviets have a small naval force in the Caribbean, usually consisting of one or two research ships and an auxiliary vessel mainly serving intelligence-gathering purposes. Periodically, they deploy naval task groups to show the flag, cruise in the Gulf of Mexico, and exercise with the Cuban Navy—whose forces are being upgraded. The most recent task group visits—which typically consist of a guided-missile cruiser and frigate—took place in April 1981 and November 1982 through January 1983.

Naval facilities in Nicaragua, Grenada, and Suriname are inadequate for providing major logistic support for these combatants. The Soviets reportedly have been surveying port development, for civilian purposes, in two places—at Grenville in Grenada and San Juan del Sur on the Pacific coast of Nicaragua. Soviet warships generally are supported by their own naval auxiliaries and do not require the use of local naval facilities. They could, therefore, visit these nations at any time for symbolic reasons. The Soviets could improvise some logistic support by temporarily deploying naval auxiliaries outside the local ports. Auxiliaries used in this manner, however, can only perform limited services. In the event that the Soviets wanted to supplement their afloat logistics with landbased support, as they do elsewhere, they would be more likely to use existing Cuban facilities than to upgrade the local facilities.

Soviet aircraft could also expand their use of existing Caribbean fields. The completion of the Point Salines airfield in Grenada will make it possible for TU-95 Soviet naval reconnaissance planes, which now operate periodically from Cuba, to expand their coverage somewhat further into the South Atlantic. New airfields now being built in Nicaragua, and other improvements there, will also enable the USSR not only to show the flag but to extend its military reach by regular flights over the eastern Pacific (although it

has little military need for such activity). It could also permanently deploy ASW aircraft or ASW naval craft in Cuba that could be aimed at monitoring training and transit areas of US Ohio-class SSBNs. Moscow may calculate that such defensive deployments would not violate the US-Soviet understandings regarding strategic weapons in Cuba.

### Potential Strategic Deployments

These pro-Soviet nations in the Caribbean Basin make it possible for the USSR to take extreme measures—such as stationing strategic weapons there—that would pose more substantial military problems for the United States. Moscow is unlikely to try to utilize them, however, as forward bases for Soviet-controlled offensive weapon systems. Such deployments would involve a major confrontation with the United States, forcing Moscow to choose between backing down in the face of superior US regional conventional forces, escalating its response to a global strategic level, or creating a low-risk diversion elsewhere.

In addition, the Soviets would have to overcome significant political and logistic constraints before deploying strategic weapons. Although the USSR is developing closer political relations with the regimes in Nicaragua, Grenada, and Suriname, its caution in dealing with them suggests that it is uncertain about their staying power. Except for Cuba in 1962, the Soviets have not deployed land-based nuclear weapons outside the territories of their close allies, where both stable regimes and stationed combat troops serve to guarantee their security.

The three Caribbean countries also lack such basic infrastructure as roads and support facilities to accommodate land-based ballistic missiles such as the SS-20, and their development would be a costly and protracted task. Moreover, construction of a regular SS-20 base with nine launcher garages would take at least a year and would be quickly detected by satellite surveillance. Furthermore, Moscow would have to install air defense systems in these countries to protect its military facilities from US attack. All of these

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considerations suggest that the USSR would turn to	
Cuba if it again were to deploy strategic systems in	
the hemisphere	
•	
The Soviets could deploy submarines equipped with	
either strategic ballistic or cruise missiles to the	
Caribbean, but the move would provide only a mar-	
ginal military advantage since the SSBNs currently	
based in the Northern Fleet and on patrol in the	
North Atlantic are already capable of hitting targets	
in the United States. Deployment to the Caribbean	
would make the submarines considerably more vul-	
nerable to the US ASW forces than they are in their	
more secure North Atlantic operating areas. In addi-	
tion, such a move would be inconsistent with evolving	
Soviet SSBN doctrine, which emphasizes placing the	
submarines equipped with longer range ballistic mis-	
siles increasingly closer to the USSR for greater	
security, protection, and control.	
While augmenting the USSR's strategic posture, none	
of these moves would significantly enhance the al-	
ready large Soviet potential for attacking the United	
States. They would be taken more with a view to	
distract US attention and resources from areas of	
more vital Soviet security concern. They might also be	
conceived of as bargaining chips to seek the withdraw-	
al of some US forces from areas close to the territory	
of the USSR.	

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### **Briefs**

Imports of Agricultura	ı
Commodities Continue	•
at High Level	

Recently released Soviet trade data confirm that the USSR imported record quantities of sugar, vegetable oils, and soybean meal in calendar year (CY) 1982. The data also show that imports of grain, meat, soybeans, and butter remained high, although below previous record levels. Falling world agricultural prices and a moderate drop in the quantity of grain and meat imported allowed the USSR to cut its total agricultural import bill by almost \$2 billion, all from hard currency sources of supply.

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USSR: Imports of Agricultural Commodities a

	1978	1979	1980	1981	1982
Grain b (million tons)	23	27	30	43	39
Meat (thousand tons)	184	611	821	980	939
Raw sugar (thousand tons)	3,990	3,766	3,839	4,190	6,161
Refined sugar (thousand tons)	3	294	1,056	936	1,115
Vegetable oils (thousand tons)	167	199	357	604	866
Soybeans (thousand tons)	874	1,765	1,085	1,396	1,506
Soybean meal (thousand tons)	0	25	438	583	1,550
Butter (thousand tons)	39	174	249	215	151
Total agricultural imports (million \$)	10.1	13.6	17.4	20.9	19.2
Of which					
Hard currency expendi- tures (million \$)	4.1	6.1	9.3	11.7	9.9

<sup>&</sup>lt;sup>a</sup> Official Soviet trade data.

b Estimated from Western statistics on volume and prices and selected Soviet data on trade with individual countries. Imports of rice and flour are excluded.

Current purchasing behavior indicates that last year's improved farm output and even better prospects for this year are allowing Moscow to reduce purchases of most commodities during 1983. Nevertheless, imports of most farm products, which since 1980 have been running at 35 to 40 percent of total hard currency outlays, will continue to be substantial. Even with the prospect of garnering the best crop in five years, grain imports may again surpass 35 million tons in CY 1983. Meat imports—likely to be over 750,000 tons—taken together with a spurt in domestic output will permit some improvement this year in per capita consump-

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Concern Over Soviet Birth Rate tion.

Soviet demographers have become skeptical that measures adopted at the 26th Party Congress in 1981 to stimulate the birth rate will prove effective. These measures include one-year partially paid maternity leave and lump-sum grants for first, second, and third births. Initially optimistic, the demographers are now convinced that these financial incentives are too low—one explicitly admitted this to an Embassy officer recently—and must be supplemented by other steps. They are calling for additional economic incentives and are also urging improved working conditions for mothers, sharing of household duties by parents, and a reduction in the divorce rate. However, they seem doubtful that even a much more ambitious pronatalist program will reverse unfavorable demographic trends.

Despite the rise in the share of the total population of women in the high fertility age groups (20 to 34 years), the Soviet birth rate has been declining for several years—from 24.9 births per 1,000 population in 1960 to 18.5 in 1981. Scholars attribute the decrease to inadequate housing, shortages of child-care facilities, increased female participation in the labor force, higher educational attainment, improved pension benefits (obviating the need for support from children in old age), fear of reduced income levels, and the effects of modernization and industrialization.

New Law on Worker Participation in Management At its mid-June session the USSR Supreme Soviet approved a new law, to take effect 1 August, on participation of workers in the management of enterprises. The law does not, however, give the workers any real power to improve their own welfare or play an active managerial role. The party will remain firmly in control, as indicated by the stipulations in Article 1 that workers' collectives must function "under the leadership of the organizations of the CPSU" and "unswervingly execute the party's decisions." The language of the law makes clear that workers will play a passive role in such critical matters as formulating enterprise plans, selecting managers, setting norms, and negotiating salaries. For example, they will "propose the names of workers as candidates for bonuses," "discuss the state of labor discipline," and "ratify the proposals of management and the trade unions on the internal organization of work."

On balance the law's passage indicates that Andropov is continuing efforts initiated by Brezhnev, largely in response to the labor turmoil in Poland in recent years, to introduce cosmetic changes that create the appearance of enhanced power for workers.

Rail Performance, January-June 1983 Railroad freight transportation in the first six months of 1983 improved markedly over the poor showing in the first half of 1982, particularly in hauling high-priority goods such as industrial raw materials, metals, oil, chemicals, and timber products. Freight turnover climbed to 1.8 trillion ton-kilometers, a 3.7-percent increase. During the same period in 1982, turnover fell by 2.3 percent.

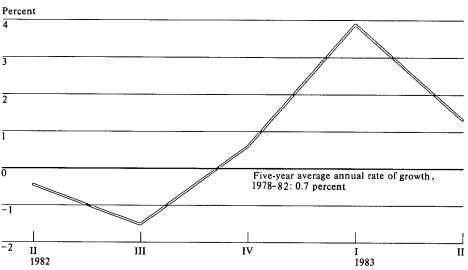
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The chart shows that the improvement began during the fourth quarter of 1982 and continued into the first quarter of 1983. Unusually mild weather and the shakeup in the Railroad Ministry probably contributed to the improved performance. The downturn in the second quarter of 1983, however, suggests that the rail system is still in trouble. Freight car shortages and rolling stock maintenance problems continue to plague the system as a whole and may slow growth in the second half of the year. Nonetheless, the rise in railroad freight turnover by the year's end could still reach 2.2 percent as called for by the 1983 Plan

### USSR: Railroad Freight Turnover, by Quarter<sup>a</sup>

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a Seasonally adjusted growth compared with five-year average.

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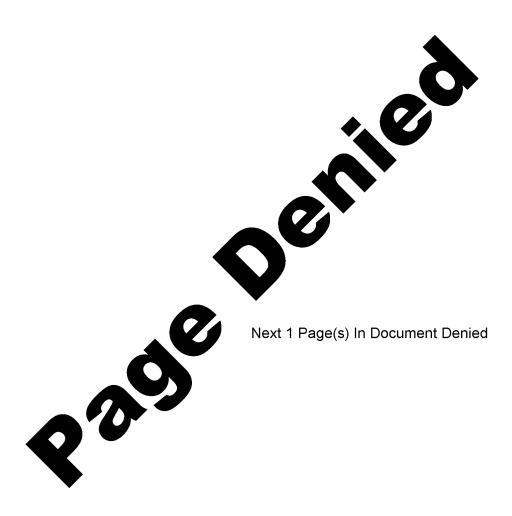
Soviet Ammonia Exports Cut	The USSR has recently cut off or delayed ammonia exports to several Western countries. After the first shipment to a Turkish-Kuwaiti fertilizer company under a 1983 contract, the USSR refused to make further deliveries, forcing the firm to close its plant. Shipments to Spanish customers (which account for half of Spain's ammonia imports) have been either delayed or canceled without explanation. The Soviets also have defaulted on supplies to Finland. During negotiations with a US firm early this year, the Soviets initially pressed for an order of about 1 million tons of ammonia but were unable to fulfill a contract for more than three-fourths of a million tons. Citing "reasons beyond our control," they actually made no deliveries during April-May 1983.	25X <sup>-</sup>
	ammonia deliveries resumed without problems in early June. As of mid-July 1983, however, the USSR remained 150,000 tons behind in its export of ammonia to the US firm.	25X <sup>2</sup>
		2071
	production problems including shortages of spare parts and poor maintenance procedures, logistic problems, and diversion of ammonia production to domestic use were the principal reasons for failure to meet	25X <sup>2</sup>
	export requirements. domestic requirements were higher than normal because the unusually mild winter advanced planting schedules	25X1
	considerably.	25X <sup>2</sup>
	The emphasis on the Food Program may have shifted priorities in fertilizer allocation. The Soviets have historically shortchanged domestic fertilizer deliveries in favor of exports.	25X′
Transfer of Defense Industry Managers to Nondefense Positions	In a sharp departure from traditional practice, the Andropov regime has recently transferred and promoted a number of personnel with defense industrial backgrounds to posts in the nondefense industrial sector as well as to party and state managerial positions (see table). These moves indicate that the leadership recognizes the management expertise available within the relatively effective defense industrial sector and intends to rely on that expertise to help steer a course through	25X <sup>-</sup>
	the present rough economic waters.	25 <b>X</b> ′
	The transfer of Sergey Afanas'yev to become Minister of Heavy and Transport Machine Building was the first such transfer of a defense industry minister in 26 years. Although the move may have had to do with the Ministry's major involvement in the production of military equipment, it appears more a case of the transfer of a proven manager to help out an ailing ministry crucial to both the ci-	,
	vilian and defense sectors	25X <sup>2</sup>
	The five new appointees in the party and state apparatus with defense industry backgrounds all held important posts under Politburo member Dmitriy Ustinov during the period 1941-57 when he was Minister of Armaments and later Minister of Defense Industry. It is likely that these new appointments had Ustinov's approval and probably his support. As the Soviet leadership seeks to improve economic performance, it most likely will continue to look to the defense industries	
	to fill management positions throughout the economy.	25 <b>X</b> ′

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## Soviet Defense Industry Managers Transferred to Nondefense Positions, 1983

Leader	Previous Relevant Posts	New Position	Comments
Sergey Afanas'yev	Minister of General Machine Building	Minister of Heavy and Transport Machine Building	The Minister of General Machine Building is responsible for missile production.
Yegor Ligachev	Engineer-designer at Chkalov Aircraft Plant; Novosibirsk party work	Chief, Central Commit- tee Organizational Party Work Department	Most of Ligachev's party positions entailed some responsibility for defense and heavy industry.
Nikolay Ryzhkov	General Director, Ural'- mash Production Asso- ciation; 1st Deputy Min- ister of Heavy and Transport Machine Building	Chief, newly created Central Committee Eco- nomic Department	The Ural'mash association, subordinate to the Ministry of Heavy and Transport Machine Building, produces military equipment.
Nikolay Slyun'kov	Director, Minsk Tractor Plant; brief stint on Minsk City Party Committee	First Secretary Belorus- sian Communist Party	Minsk Tractor Plant produces military vehicles as well as tractors.
Vitaliy Vorotnikov	Early work at Kuyby- shev Machine Building Plant; party work	Candidate member Politburo	Vorotnikov's party work included supervising local and regional defense industrial affairs.
Yakov Ryabov	Engineering and supervisory work at the Sverdlovsk Turbo Engine Factory; party work in Sverdlovsk; CPSU Secretary for defense matters; 1st deputy chairman Gosplan	Chairman, State Committee for Foreign Relations (GKES)	At Gosplan, Ryabov was believed responsible for general economic planning.



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