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**USSR: Implications of
a Fourth Consecutive
Poor Grain Crop**

An Intelligence Memorandum

CIA HISTORICAL REVIEW PROGRAM
RELEASE AS SANITIZED

1999

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SOV 82-10128X
August 1982

CSY



Directorate of
Intelligence

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An Intelligence Memorandum

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This paper has been coordinated with the National
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USSR: Implications of a Fourth Consecutive Poor Grain Crop

Summary

The outlook for the 1982 Soviet grain crop has deteriorated over the past two months. We now estimate that the grain harvest will amount to only about 165 million tons—more than 70 million tons below plan and 40 million tons below the annual average for 1976-80.¹ Major uncertainties in the weather for the remainder of the season suggest the crop could fall below last year's unofficially reported 158-million-ton level. A fourth consecutive poor Soviet grain crop will have an impact on:

- The livestock sector, setting back longstanding plans to boost meat and milk output.
- The consumer sector, thwarting hopes for rapid improvement in quality of diet.
- The foreign trade sector, perpetuating heavy outlays for Western grain and other farm products.

The political repercussions probably will be significant as well. Debate and conflicts on resource allocation within the leadership will be sharpened—especially in the current succession environment, and at a time of slowing economic growth.

Even in years of poor harvests, the Soviet Union produces more than enough grain to supply its population with bread and other grain products. Its problem is in supplying feed to maintain livestock herds and to expand meat production. The meat program has been the centerpiece of Brezhnev's consumer program since he took power in late 1964. As recently as last May's plenum devoted to agriculture, he promised to improve food supplies this year. But now, even with record high meat imports, per capita supplies probably will fall slightly. Overall availability of farm products per capita will be about 6 percent below the 1978 peak.

To do even this well, Moscow will have to spend over 40 percent of its anticipated hard currency outlays on farm products. Such an allocation of funds will mean canceling, or at least postponing, some purchases of high-technology machinery and equipment and of basic industrial materials.

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*Information available as of 1 August 1982
has been used in the preparation of this report*

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SOV 82-10138A
August 1982

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critical to economic growth plans. We believe, however, that the Soviet leaders will import the foodstuffs required to maintain the nation's diet close to current levels despite the economic cost—the political cost of increasing consumer dissatisfaction is probably too high to do otherwise. But in the face of a fourth consecutive disappointing harvest, the leadership may call into question its long-term policy on agriculture.

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USSR: Implications of a Fourth Consecutive Poor Grain Crop

Introduction

Prospects for the 1982 Soviet grain crop worsened considerably during June and July. Since late May a potential grain harvest of perhaps 220 million tons has steadily deteriorated to about 165 million tons, and it could drop still further. This paper explores the domestic economic and political implications of this fourth consecutive poor harvest. An earlier paper, *USSR: Grain Crop Issues*, examined crop prospects and Moscow's import options for dealing with the expected grain shortfall.

A fourth poor grain crop poses onerous policy choices for the leadership. Even if extraordinary steps are taken to maintain current dietary levels, Brezhnev's promise in May to improve the quality of the diet in the near term cannot be met. This paper assesses the economic impact of the poor grain crop on the livestock sector, on the consumer, and on hard currency trade, and discusses possible repercussions on the leadership.

A grain harvest of 165 million tons would be at least 65 million tons short of Moscow's needs for food, seed, livestock feed, and industrial uses, necessitating large grain imports again this year. A record 45 million tons of grain (excluding rice) was imported during marketing year 1982 (1 July 1981-30 June 1982). Even so, grain imports cannot totally make up for the domestic production shortfall. (The Soviet Union's internal distribution system can handle an estimated 50 million tons a year in grain imports if deliveries are spaced fairly evenly throughout the year.)

Some Options for Coping With the Shortfall

Moscow has several options for coping with the shortfall (on the order of 15-20 million tons) remaining after imports. These include:

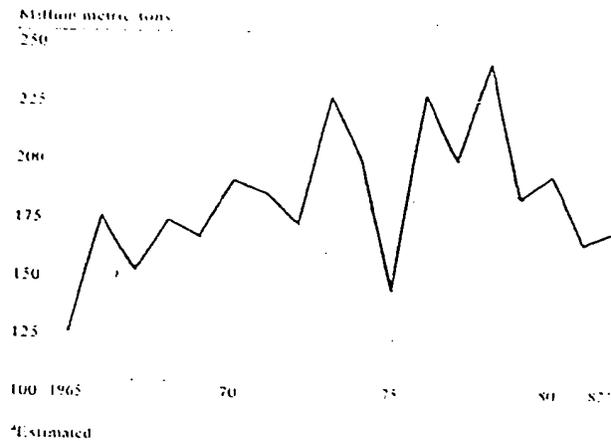
- Further drawdown of reserves. We do not know the size of Soviet grain reserves,¹ but we believe that because of a heavy drawdown in recent years this source could contribute at most only 5 million tons or so.
- Reduction in the quality of bread, with a saving of a few million tons.
- Reduction of livestock inventories by some 3 percent (about what was done in 1975), to save roughly 7 million tons.
- Reduction of feed grain rations per head of livestock. This means accepting sharp declines in productivity—lower milk and egg yields—and marketing lighter weight animals.
- Combining a smaller herd reduction with some productivity decline.

¹ Less is known about grain stocks than any other aspect of the supply and demand situation. The quantity held in reserve is a state secret, protected by law.

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Figure 1

USSR: Grain Production



Some distress slaughter of hogs and poultry, the heaviest grain consumers, is probable. However, even with a 3-percent reduction in total herds, meat production will not exceed 15 million tons this year (it was 15.2 million tons in 1981).¹ Our judgment is based on past relationships between production and imports of grain, meat output, and changes in livestock inventories. (These relationships have been used to develop a model of the Soviet grain-livestock economy, described in appendix A.) Even if the grain crop rises to average levels in 1983 and 1984, meat supplies will not return to the 1981 level until 1984 because of the time required to restore normal market weights and to rebuild herds.²

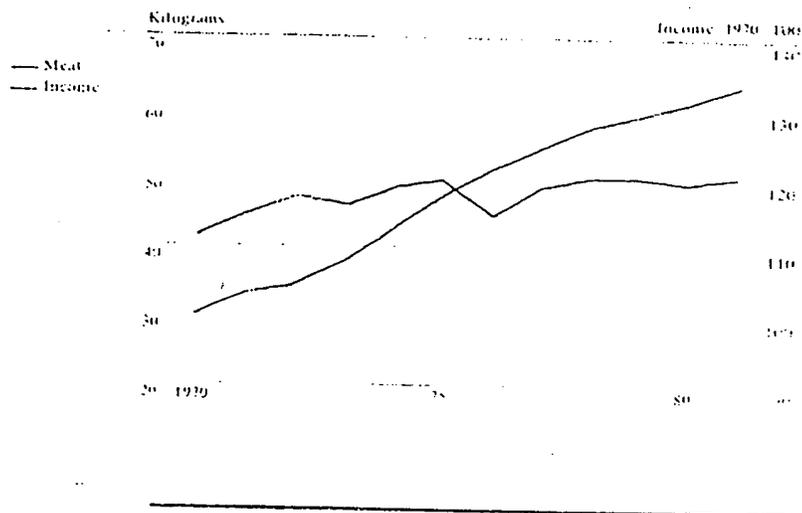
¹ Overall herd size is measured in equivalent units into which cattle, hogs, poultry, sheep, and goats are converted by the use of weights based on relative feed requirements. A 3.6-percent reduction in total herds in 1975 resulted from a 20-percent cut in hogs and a 7-percent cut in poultry.

² Sharply reduced feed supplies and already low animal productivity will probably cause above-normal livestock slaughter and a temporary increase in meat supplies. A decision to maintain herds at present near-record levels, on the other hand, would mean about 400,000 tons less meat produced in 1982; and this would lead, by our estimates, to a 5-percent drop in per capita availability from the 1981 level (see appendix B).

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Figure 2

USSR: Per Capita Meat Consumption and Real Disposable Income



Impact on the Consumer

The present Soviet leaders have a longstanding and well-publicized commitment to improve the plight of the Soviet consumer. Much of this effort has focused on improvements in the diet, with meat as the centerpiece.

With better-than-average weather conditions and successful grain crops, the commitment to improve the diet was met between the mid-1960s and early 1970s. However, in the mid-1970s the weather was less favorable, and grain production suffered, especially in 1975. Weather conditions have been persistently unfavorable during the last three crop years (figure 1). Even with record grain and meat imports, per capita meat consumption has languished since 1975 at around 50 kilograms (figure 2)—this is roughly 40 percent of the US level and 70 percent of the Polish level. Even with record-level grain and meat imports, we foresee a slight drop in per capita availability of meat this year. Moreover, the poor weather that reduced grain output is affecting production of other crops. On the basis of very preliminary estimates, the value of total farm output is expected to be up only slightly over last year's depressed level and to remain some 7 percent

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below the record output achieved in 1978. This rules out any substantial increase in supplies of other quality foods, particularly fruits and vegetables.

Soviet consumers are very alert to changes in the availability of meat. Demand for meat has consistently outstripped supply, and shortages are chronic. Soviet economists indicate that the demand for livestock products in recent years has been increasing about 1.5 times as rapidly as money incomes, which have also been on the rise. This rapid growth in demand is encouraged by Soviet policies that have maintained retail prices of meat at artificially low levels and have limited the availability of other goods that could absorb excess rubles. The gap between meat demand and domestic production widened by 3 million tons during 1976-80 (see insets 1 and 2 and figure 2)

In his speech in May 1982 unveiling the long-promised, highly touted "agroindustrial reorganization," Chairman Brezhnev reiterated his commitment to the food program and promised that food supplies would improve this year. In addition to the embarrassment and political risk that would follow a substantial fall in quality food supply during the first year of the program's implementation, the regime must worry about repercussions in other sectors of the economy. It is well aware that shortages (of quality foods and other desired consumer goods) undermine worker morale and inhibit the gains in productivity that the regime is counting on to stimulate economic growth:

**Impact of the Harvest
on Hard Currency
Trade**

The poor 1982 harvest will have a major impact on the Soviets' use of hard currency. During 1979-81, the USSR spent more than \$26 billion on farm products; but without such imports, per capita availability of livestock products would have decreased markedly (see figure 3). We expect hard currency outlays for agricultural products to reach a record high of over \$12 billion in 1982, absorbing more than 40 percent of all hard currency expenditures. We believe the leaders will continue to feel that the *political* cost of allowing food supplies to dwindle would exceed the *economic* cost of importing food products.

Massive farm product imports have reduced the Soviets' ability to maintain other types of imports at the levels necessary to alleviate the current strain on industrial output; and continued massive imports will prolong that effect. The types of goods affected include machinery and equipment, as well as basic industrial materials.

¹ For a full discussion of this subject see DDI Intelligence Assessment SOV 82-10012 (Secret []), January 1982, *Soviet Economic Dependence on the West*

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Meat Prices and the 1962 Food Riots

One policy option the Soviets have is to raise the price of meat. Informed Soviet sources are reporting that prices for basic foodstuffs (for example, bread, milk, sugar) will remain stable, but "quality improvements" will justify raising prices on all other foods. We believe this regime is unlikely to impose a steep or abrupt price hike, however—especially in view of past experience in which an increase in meat prices touched off severe civil disturbances.

On 1 June 1962 the Soviet Government announced that average retail prices for meat products were raised by 30 percent and for butter by 25 percent. These increases, which reportedly came on the heels of an announcement that factory work norms had been raised, led to a spontaneous outburst among workers—sitdown strikes, mass protests on factory premises, and street demonstrations.

An article in Problems of Communism described events in Novocherkassk.*

... mob violence in the factories, especially among the 11,000 workers at the Budyenny Electric Locomotive Plant and also at the Nikolsky Mining Equipment Factory and the large state regional power station. After disorders in which a number of local officials were bodily attacked (and at least one party official killed, according to one rumor), workers of several plants began a march toward government and party buildings in the center of the city and added their weight to the uncontrollable rioting already in progress.

... When the rioting showed no signs of abating, but on the contrary of deepening and spreading to other areas, the decision was taken to move military forces... to restore order in Novocherkassk. But the arrival of armed troops did not in itself bring order; the angry demonstrators had gone too far to be easily intimidated or to surrender meekly the buildings, which had been converted into resistance strongholds. Bloody clashes between troops and rioters became inevitable, resulting in large numbers of casualties on both sides.

The immediate cause of these demonstrations was the increase in meat prices. But they also reflected general unrest and dissatisfaction with the continued low standard of living—aggravated by the leadership's grandiose promises of improvement.

* *Butter, Albert, "When the Kettle Boils Over..." in Problems of Communism, Vol. 13, No. 1, February 1964, p. 36-37. R.C.*

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The Consumer Paradox, Soviet Style

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Soviet consumers have more money to spend than goods and services to spend it on. Soviet planners are concerned about the situation, but their ability to change it is limited. Chronic shortages have increased worker frustration, contributing to falling rates of growth in labor productivity, which in turn contribute to further shortages.

The consequences of chronic shortages of goods and services can be seen in consumer behavior. Time spent searching for scarce products and waiting in lines is an enduring, constant problem and, according to current reporting, seems to be worsening. A Soviet estimate is that the average family spends two hours a day shopping. Shortages are such a frequent subject of discussion that an adjective has been coined for the products affected: defitsitnyy.

Soviet planners have made some attempts to absorb excess purchasing power. They cannot increase rent or the prices of basic foods and other necessary consumer goods, because it is politically unacceptable. They have raised the prices of "luxury goods" (such as gasoline, carpets, and coffee) four times in the last five years, but excess purchasing power remains a problem.

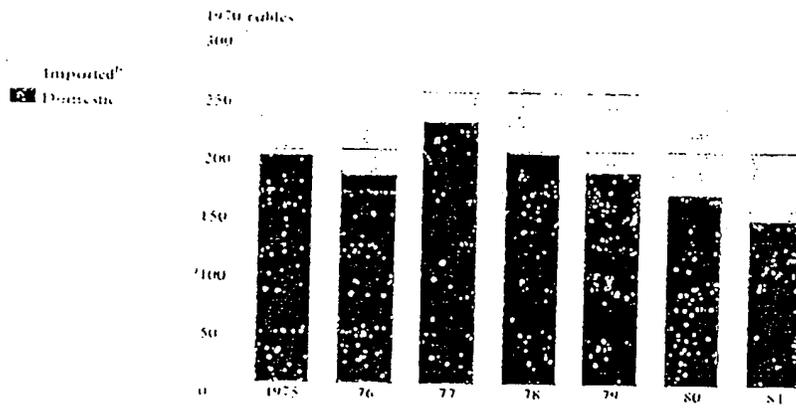
Planners could also absorb purchasing power by increasing the availability of consumer goods, but their ways of doing so are limited. Production of more consumer goods would require diversion of scarce resources from areas that have traditionally had higher priority: defense and investment. They could import more Western manufactured consumer goods (shoes and clothing, for example) to be sold domestically at high prices; but Soviet earnings of hard currency are already being stretched to import grain, other farm products, machinery, and critical materials for industry.

The shortages have cut into labor productivity. Workers often do their searching and queuing during working hours, not in their leisure time. Incentives to work and earn are decreased when the wages cannot buy what the consumers want.

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Figure 3

USSR: Per Capita Availability of Livestock Products^a



^a adjusted for inventory changes and exports.
^b includes value of imported products and of agricultural commodities used in the domestic output of livestock products.

Imports of Western machinery and equipment—and especially the advanced technology they embody—are a key element in the Soviet program to improve productivity, and productivity growth is the crucial element of economic performance in the 1980s. Similarly, imports of industrial materials can alleviate domestic bottlenecks and shortages. With the poor performance of Soviet basic industries continuing—if not worsening—such shortages are likely to become more severe.

Finally, although we do not know how much hard currency the Soviets had planned to allocate to food imports in recent years, it is clear that actual outlays greatly exceeded those planned. The impact of these unforeseen hard currency disruptions on economic performance is more severe than their magnitude might imply—they disrupt supply and production plans, thereby having a multiplier effect. Given the tautness that characterizes Soviet economic plans, it is probable that at least part of the unusual setbacks the Soviets have experienced since 1975 in accomplishing productivity goals is linked directly to disruptions in their import plans (see inset 3).

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Recent Favorable Terms of Trade Coming to an End

The role of chance in Soviet economic affairs is not always negative. While weather was a key factor leading to large food imports, price movements in international markets—another phenomenon beyond Soviet control—have "saved" the USSR roughly \$20 billion over the past three years. That is, during 1979-81 the Soviets garnered some \$20 billion simply because the prices of the products they sell increased much more rapidly (over one-third faster) than the prices of products they buy.

This fortuitous trend in prices appears to have turned around. Thus, even the prospect that grain prices will be lower this year (as a result of bumper crops in the West) will do little to soften the blow to Moscow of the poor 1982 harvest.

International Price Changes

Percent

	Average 1979-81 Price Compared to 1978 Price	1982 Price Compared to 1981 Price
Major Commodities USSR Sells ^a		
Oil	117	-4
Natural gas	96	1
Gold	137	-25
Major Commodities USSR Buys ^b		
Grain	27	-13
Meat	27	-4
Machinery and equipment	16	NEGL
Steel products	26	3

^a These three commodity groups accounted for 70 percent of Soviet hard currency earnings from exports in 1981.

^b These four commodity groups accounted for 54 percent of Soviet hard currency outlays for imports in 1981.

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Political Impact of the 1982 Harvest

This fourth consecutive harvest shortfall probably will have significant political repercussions. It undoubtedly will sharpen debate and conflicts within the leadership, especially in the current succession environment. The slowing of economic growth rates has already called into question the efficacy of Brezhnev's strategy for maintaining consumer quiescence and worker motivation—a strategy predicated on the regime's ability to provide incremental improvements in the standard of living. Even if the regime acts to maintain current dietary levels, as we believe it will, success in maintaining the status quo will fall short of rising consumer expectations, and the potential for unrest among groups already discontented—workers and minority nationalities—will increase.

Consumer frustration in the USSR manifests itself in low labor productivity and in alcoholism and other social ills more frequently than in active unrest. Protests over inadequate food supplies, however, have been reported in some 30 Soviet cities over the past year and a half (see figure 4)

There are indications that Soviet leaders are becoming increasingly worried about the mood of the population. In May, for example, Andropov told East European officials he was seriously concerned about public morale in the USSR. With meat supplies tight this year, the leadership will feel increased pressure either to devise alternative policies for satisfying consumer desires or to tighten controls over a population that has become more demanding, less believing, and less pliable during Brezhnev's tenure.

One focal point of leadership debate will be Brezhnev's much ballyhooed food program, which is still in its infancy after months of preparation. Reorganizations that would be required by the program have apparently already sparked controversy within the Politburo. Chernenko, Shevardnadze, and Gorbachev have evidently lobbied in favor of some decentralization of management, while other members—including Andropov—have not yet endorsed the reorganization * publicly

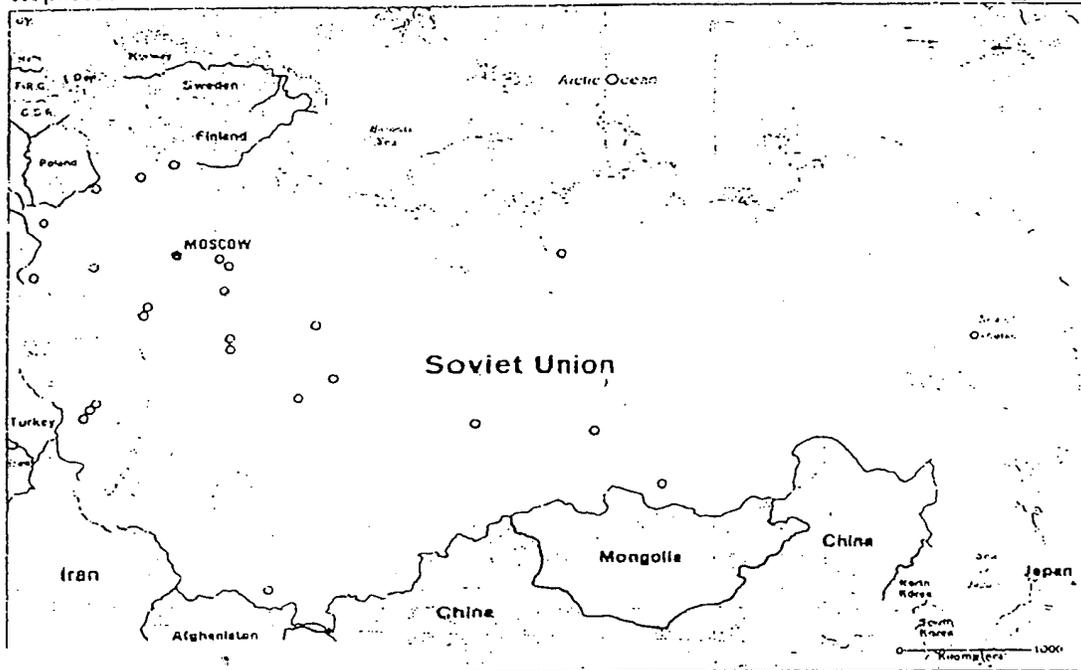
The harvest shortfall might lead to a search for scapegoats, as agricultural debacles and policy controversies have done in the past. After the 1972 harvest shortfall the First Deputy Premier responsible for agriculture, Polyansky, was demoted to Agriculture Minister, and the incumbent Agriculture Minister was fired. Another Politburo member, Voronov, lost his job in 1972 after unsuccessfully promoting a plan for reorganizing

* A more detailed discussion of this topic will be found in DD1 Intelligence Assessment, *The Brezhnev Food Program*, which is currently in preparation.

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Figure 4
Reported Demonstrations, 1981-82



agricultural labor. After the 1975 harvest failure, Polyansky was again demoted, this time to an ambassadorial position. The last three harvest shortfalls, however, have not led to leadership changes.²

It is by no means certain which leaders stand to gain politically from the current agricultural problems. Advocates of greater investment in heavy industry, such as Kirilenko, may argue that the run of bad harvests has demonstrated the bankruptcy of Brezhnev's massive investment in agriculture. Leaders closely associated with agriculture, such as Gorbachev, may counter that difficulties in agriculture make it even more essential than before to aid this distressed sector.

² The USSR continues to hold back information on official grain production for 1981. Unofficially, several Soviet economic lecturers have put the crop at 158 million tons—78 million tons short of target. The preliminary handbook on 1981 economic data, published by the Central Statistical Administration, was published in July but did not contain production statistics. The omission is not unprecedented; in 1964, shortly before Khrushchev's ouster, the results of the poor 1963 grain harvest were also withheld.

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In coming months, Soviet policy in dealing with social problems aggravated by the harvest shortfall will probably contain a mix of "liberal" and "authoritarian" measures. Worry about the popular mood could prompt some leaders—perhaps Chernenko—to advance limited "populist" reforms to shore up the regime's legitimacy and stimulate labor productivity. But other leaders will be apprehensive about a breakdown in popular discipline and will urge increased reliance on coercion to prevent major social and economic dislocations—and this is likely to be the dominant trend.

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Appendix A

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The CIA Model of Soviet Agriculture

The impact of the 1982 grain crop on the Soviet livestock sector discussed in this paper is derived from the CIA impact model of Soviet agriculture. This model is based upon past Soviet behavior in adjusting to fluctuations in the availability of grain.

The model contains statistical equations estimated over the period 1961-80. Projections based on these estimates assume average Soviet behavior as suggested by agricultural performance over that period. The projections cannot be used to estimate shifts in Soviet behavior—although the same analytical framework can be used to examine the impacts of assumed changes in Soviet reaction patterns, as some of the analysis in this paper attempts to do.

Much of the essential data on the Soviet livestock sector has severe limitations, which limit the consistency and precision of the analysis. In addition, frequent policy shifts make it difficult to isolate reliable trends among specific variables. Nonetheless, there is enough stability in historical relationships to provide some guidance in impact analysis. This is illustrated in figure 5, which compares our estimates of Soviet meat production with the actual figures.

The estimates in figure 5 are derived from the equation below. T-statistics are in parentheses. The adjusted coefficient of determination (R²), the Durbin-Watson statistic (DW), and the range of years of the historical data appear after the equation.

$$\frac{\text{Meat}}{\text{Livestock}} = 0.002 + 0.035 \frac{\text{Total feed}}{\text{Livestock}} - 0.088 \frac{\text{Net additions to livestock}}{\text{Livestock}} + 0.007 \frac{(\text{Actual grain crop}) - 1}{(\text{Trend grain crop}) - 1}$$

(0.2) (9.2) (4.6) (2.0)

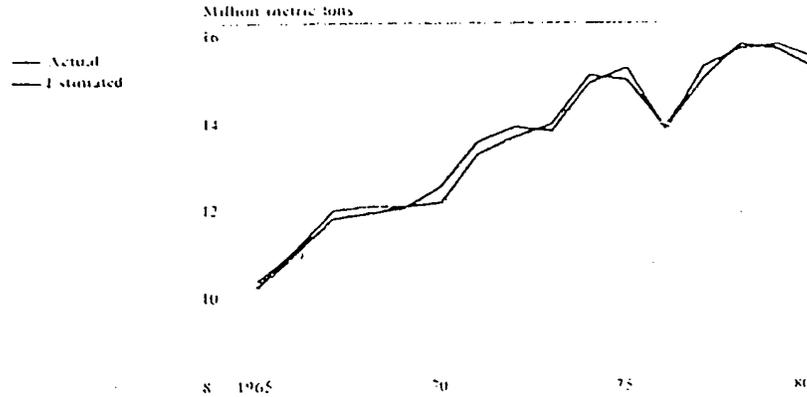
R² = 0.89 DW = 1.53

Range: 1965-80

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Figure 5

USSR: Meat Production



Meat production per unit of livestock has depended upon three factors.

- A positive relation with feed availability per animal.
- A negative relation with herd inventory adjustments (because herd increases generally mean less slaughter and vice versa).
- A positive relation with the previous grain harvest. This relationship suggests that a combination of improved feed quality and higher average slaughter weights follows a good grain crop and the reverse follows a poor one.

Impact analysis in this paper combines separate projections of livestock numbers, grain production, and total feed availability, as shown in the equation, to estimate meat output through this relationship.

For 1982, the projections include:

- A 3-percent reduction in overall herds (weighted by relative feed requirements).
- A 165-million-ton grain crop.
- A total feed availability of 382 million tons (down 4 percent from the 1981 level).

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The estimate of total feed availability is based on the average historical relationship between total grain production and total nongrain feed availability--both measured in feed units (comparable nutritive value). The percentage change in total feed availability is much smaller than that in grain production because:

- The effect of grain production changes on feed is dampened by stock changes.
- Grain (in nutritive terms) is only one-third of total feed use.
- Nongrain feed supplies fluctuate less widely from year to year than grain supplies do.

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Appendix B

Coping With the Shortfall

A grain crop of 165 million tons leaves the USSR at least 65 million tons short of the quantity needed for seed, food, industrial use, and livestock feed. Imports will be unable to fill the gap because of constraints in the internal distribution system. For purposes of our calculations, we assume imports in calendar year 1982 of 45 million tons, slightly above the record net level imported in calendar year 1981. To the extent that imports are less, the adjustments will be greater as the leadership copes with the shortfall.

The planners could ease the shortfall slightly by reducing the quantity of grain used for food and industrial purposes—but the livestock sector will bear the brunt, as it has in the past. Moscow will be forced to reexamine its longstanding policy of increasing herds—or at least maintaining them, avoiding distress slaughter—even in the face of short grain supplies. A shift of this policy is assumed in our model-based estimates of the impact of a low 1982 harvest.

Maintaining herds at current near-record levels with reduced feed supplies means further declines in meat productivity for each animal. Throughout the first half of 1982, slaughter weights of cattle and hogs (on state and collective farms, which account for two-thirds of meat production) registered the lowest levels since 1977—the first year for which monthly data are available. Milk yields per cow were 16 percent below the 1977 peak. If there is no distress slaughter, we estimate that total meat production in 1982 will be about 14.6 million tons (compared with 15.2 million tons in 1981).

Slaughtering animals at above-normal rates—a tactic strenuously avoided since 1975—would increase meat supplies temporarily and also would slow or stop the declines in animal productivity as it stabilized per head feed availability. A 3-percent reduction in overall herds—slightly less than the cutback in 1975—would result in 1982 meat production of about 15.0 million tons. In 1983, herd rebuilding (increases in numbers and increases in average weight to trend level) would hold domestic meat marketings to about 15 million tons; this is 400,000 tons less than it would be if there were no above-normal slaughter in 1982, even if the 1983 grain crop returns to trend. By 1984, however, another trend grain crop would lead to a long-promised resumption in growth of meat production. (Our method for estimating meat production is outlined in appendix A.)

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On balance, a reduction in the number of the heavy grain-consuming animals—hogs and poultry—seems preferable to allowing further declines in average productivity. Productivity gains have been slow, and averages are still well below those of the United States. Average milk yields in 1980, for example, were about 40 percent of the US level, and the average slaughter weight of cattle was about 70 percent. Only in slaughter weight of hogs—90 percent of the US level—does the USSR compare at all favorably. More important, the time required for hogs to reach their average slaughter weight in the USSR is roughly double that in the United States, while cattle take on average a third longer.

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